

Distributed Systems Design - Course Outline

NWEN 401: 2011 Trimester 1

This document sets out the workload and assessment requirements for NWEN 401. 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.

Aim

Distributed system concepts and techniques underlie much of modern computer technology; client-server, grid and web based systems based on high-bandwidth networks support applications ranging from business data processing to multimedia information systems. NWEN 401 aims to teach the concepts and principles used in the design and construction of distributed systems, with practical examples, providing a suitable knowledge base for those aiming for careers in advanced system and application development, or in research.

Topics will include:

1. Key concepts related to Distributed Systems and their different architectures.
2. Processes and communication between processes.
3. Naming and synchronisation.
4. Overlay networks and content distribution.
5. Consistency and replication.
6. Fault tolerance.
7. Security.

Objectives

On completing this course, you should be able to meet the objectives listed below. Note that as Distributed Systems Design 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 objectives contribute to the graduate attributes (GA) as indicated below. A full table of these attributes is available at [Graduate Attributes](#).

1. Be able to explain the principles and goals of distributed system design, the tradeoffs in using different mechanisms for building distributed systems, the principles of building secure and reliable distributed systems and key algorithms for coordination within distributed systems.
2. Be capable of applying their knowledge of distributed systems to solve problems related to the design and analysis of such systems (GA [3\(a\)](#), [3\(b\)](#), [3\(c\)](#), [3\(e\)](#)).
3. Be capable of implementing a distributed system and evaluating it using experimental techniques (GA [3\(c\)](#), [3\(f\)](#)).
4. Be able to identify and apply an understanding of the social, cultural and environmental responsibilities of engineers with respect to issues of security and fault tolerance (GA [1\(a\)](#)).
5. Be able to find, analyse and synthesise research literature related to distributed systems and present your synthesis both in oral and written form (GA [2\(b\)](#), [3\(d\)](#)).

Textbook

The textbook for NWEN 401 is: Distributed Systems: Principles and Paradigms 2nd Edition by Tanenbaum and van Steen.

Lectures and Assessment

A [schedule](#) of lecture topics, readings, assignments and other assessment due dates is available online

Lectures for NWEN 401 are:

Day	Time	Room
Tuesday	1410-1500	New Kirk 103
Friday	1410-1500	New Kirk 103

Assessment

Your grade for NWEN 401 will be determined based on the following assessment weightings:

<u>Item</u>	<u>Due</u>	<u>Weight</u>
Assignment one	17/04/11 23:59	10%
Assignment two	05/06/11 23:59	10%
Term paper	29/05/11 23:59	30%
Presentation	Week 12	10%
Final Examination	Exam period	40%

Assignments

The two assignments will involve a mix of questions that require you to apply principles and techniques to solving problems (course objective 2) and also the second assignment will also include a programming task (course objective 3) and questions related to social and environmental responsibilities of engineers (course objective 4).

Term Paper

The term paper will require you to find literature relevant to your topic, analyse it and both present a written and oral report (objective 5). The term paper should not exceed 3,300 words in length and should be between 8 and 12 A4 pages of double spaced 12-point text with one inch margins.

Use of Turnitin.com

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine <http://www.turnitin.com>. Turnitin is an online plagiarism prevention tool which compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy & typed by the School and subject to checking by Turnitin. Turnitin will retain a copy of submitted material on behalf of the University for detection of future plagiarism, but access to the full text of submissions is not made available to any other party.

Submission and Penalties

Both assignments, term paper and a copy of your presentation are to be submitted electronically.

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.

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

Examination

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 **two** 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 1 is 10 - 29 June.

Group Work

There is no group work in this course.

Laboratories

Occasional laboratories will take place in CO246 as needed to support practical assignment work. We have two hours booked from 3.10pm on Fridays.

Workload

In order to maintain satisfactory progress in NWEN 401, you should plan to spend an average of at least *10 to 12* hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures: 2 hours
- Assignments and term paper: 8-10 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 401 is [Ian Welch](#). The lecturer for the course is [Winston Seah](#). Their contact details are:

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

- [Winston Seah](#)
- [Cotton 336](#)
- +64 4 463 5233 x8493
- winson.seah@ecs.vuw.ac.nz

Announcements and Communication

The main means of communication outside of lectures will be the NWEN 401 web area at http://ecs.victoria.ac.nz/Courses/NWEN401_2011T1/. There you will find, among other things, this document, the [course schedule](#) and [assignment handouts](#), and the [NWEN 401 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.

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

You must attempt both assignments, the term paper and the presentation.

Passing NWEN 401

To pass NWEN 401, a student must satisfy mandatory requirements and gain at least a **C** grade overall.

Withdrawal

The last date for withdrawal from NWEN 401 with entitlement to a refund of tuition fees is Fri 11 March 2011. The last date for withdrawal without being regarded as having failed the course is Fri 13 May 2011 -- 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.
