TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI VICTORIA UNIVERSITY OF WELLINGTON

SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

Internet Engineering - Course Outline

NWEN 402: 2010 Trimester 2

This document sets out the workload and assessment requirements for NWEN 402. 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.

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Objectives

NWEN 402 is designed to:

- Investigate the science and technology of distributed systems and networking in real systems;
- Provide insight into aspects of real-world projects such as scalability, reliability/availability and economics; and
- Provide an overview of emerging and new aspects of Internet technology.

By the end of the course, students should:

1. Know the real world issues involved in the deployment and operation of IP networks. (BE graduate attribute 3(d), 3(e))
2. Be able to design, implement and configure fundamental IP networks, network devices, and network services. (BE graduate attribute 3(a), 3(b), 3(c))
3. Be aware of standardization efforts and research pursued by academia and industry. (BE graduate attribute 3(d), 3(e))

Textbook

There is no specific textbook for NWEN 402. The materials covered in the course can be found in the following recommended references, along with any other publications, notes or materials required. Most (if not all) of the publications will be available online through the VUW Library website or made available on the course website for students to download.

Recommended references:

- Douglas E. Comer, *Computer Networks and Internets*, 5th Edition, Pearson International Edition, 2009. -- this book covers the fundamental topics as well as advanced topics discussed in this course
- William Stallings, *High-Speed Networks - TCP/IP and ATM Design Principles*, Prentice Hall, 1997.

Lectures, Tutorials, Laboratories, and Practical work

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

Lectures for NWEN 402 are: Mon/Thu 0900-0950 EA004

Tutorials / Seminars are on: Fri 0900-0950 EA004

Seminar Presentation Schedule

Week	Date	Presenter	Paper title/topic	Comments
1	16 Jul	**No presentation**		
2	23 Jul	**No presentation**		
3	30 Jul	Koshy John	Stas Khirman and Peter Henriksen, "Relationship Between Quality-of-Service and Quality-of-Experience for Public Internet Service"	PPT
		Samuel Russell	Geoff Huston, "Quality of Service - Fact or Fiction?"	PPT
		Casimirraj Subramanian	Daniel O. Awduche and Bijan Jabbari, "Internet traffic engineering using multi-protocol label switching (MPLS)"	PPT
4	6 Aug	Elwyn Benson	Yuan-Cheng Lai and Ching-Neng Lai, "DCCP partial reliability extension with sequence number compensation"	PDF
		Amit Dhull	J. Iyengar et al., "Concurrent multipath transfer using SCTP multihoming over independent end-to-end paths"	PPT
5	13 Aug	Arya Reais-Parsi	H. Melvin and L. Murphy, "Time Synchronization for VoIP Quality of Service"	PDF
6	20 Aug	Ausama Al-sahaf	C. Perkins and L. Gharai, "RTP and the Datagram Congestion Control Protocol"	PPTX
		Harith Al-sahaf	S. Keshav and S.P. Morgan, "SMART retransmission: performance with overload and random losses"	PPTX
		Priyanka Dhull		
-	27 Aug	**Mid Term Break**	**No presentation**	
-	3 Sep	**Mid Term Break**	**No presentation**	
7	10 Sep	Jared Armstrong	C. Hoene, H. Karl and A. Wolisz, "A Perceptual Quality Model for Adaptive VoIP Applications"	PPTX
		Yang Liu	R. K. Balan, et al., "TCP HACK: a mechanism to improve performance over lossy links"	PPT
		Pete Russell	S. Vangala and M.A. Labrador, "The TCP SACK-aware snoop protocol for TCP over wireless networks"	PPTX
8	17 Sep	Nan Liu	C. Parsa and J.J. Garcia-Luna-Aceves, "TULIP: A link-level protocol for improving TCP over wireless links"	PPTX
		Jan von Mulert	H. Han, et al., "Multi-path TCP: a joint congestion control and routing scheme to exploit path diversity in the internet"	PPTX
		Mike Lin	W. Shi, M.H. MacGregor and P. Gburzynski, "A scalable load balancer for forwarding internet traffic: exploiting flow-level burstiness"	PPTX
9	24 Sep	Dong Xia	Seung-Joon Seok, et al., "A modification of TCP flow control for improving end-to-end TCP performance over networks with wireless links"	PPTX
		Panrawee Vechsamutvaree	Bryan Ford, "Structured Streams: a New Transport Abstraction"	PPTX

		Bruce Mills	A. Chockalingam, et al., "Wireless TCP Performance with Link Layer FEC/AKQ"	PDF
10	1 Oct		**No presentation**	
11	8 Oct		**No presentation**	
12	15 Oct		**Reserved for project presentation**	

Grades for Presentation

300087695	A+
300030127	A+
300092366	A+
300095857	A+
300138114	A+
301024637	A+
300121354	A
300146779	A-
300146827	A-
300198176	B+
300089748	B-
300154714	B-
300228115	B-
300138949	C
300211281	C
300053613	E
300154712	E

Assignments and Projects

Term Paper : This requires the students to conduct a study of advanced technologies that have been developed to enhance the capability of the Internet to address the requirements of new applications and services, typically those that require Quality of Service levels beyond the inherent Best Effort service. (BE graduate attribute 2(b),3(a),3(d)) Grades are on the Assignments page.

Seminar Presentation : each student will read a published technical paper, prepare and give a short presentation on the topic discussed in the paper (BE graduate attribute 2(b))

Project : The aim of this project is to emphasise key aspects of Internet computing. The project is an integral part of NWEN 402, and is based on the topic of the Internet Service Provider – Students will work in groups to design and develop the blueprint for an ISP. Based on the design, they will then construct the basis for an ISP in the laboratory and explore ISP configuration and operations. (BE graduate attribute 1(b),2(a),3(b),3(c),3(e),3(f))

Workload

In order to maintain satisfactory progress in NWEN 402, you should plan to spend an average of at least *10 - 12* hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 2 - 3 hours
- Readings: 3 - 4 hours
- Assignments: 5 - 6 hours

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

Staff

The course organiser for NWEN 402 is Andy Linton. The lecturers for the course are Andy Linton and Winston Seah. Their contact details are:

- *Andy Linton*
- Cotton 330
- +64 4 463 5114
- Andy.Linton@ecs.vuw.ac.nz

- *Winston Seah*
- Cotton 336
- +64 4 463
- Winston.Seah@ecs.vuw.ac.nz

Announcements and Communication

The main means of communication outside of lectures will be the NWEN 402 web area at http://ecs.victoria.ac.nz/Courses/NWEN402_2010T2/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the NWEN 402 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 402 will be determined based on the following assessment weightings:

Item	Weight	Assessed by
Term paper	25%	Winston
Seminar Presentation	5%	Winston
Project	30%	Andy
Final Examination	40%	Andy & Winston

Tests and Exams

Description of tests and what to do if you can't attend them

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 18 October - 14 November.

Practical Work

Seminar Presentation : this will begin in Week 2. Each week, 3 students will be assigned one paper each to read and present in the following week on Friday.

Term Paper : details of the assignment will be announced in Week 2.

Group Project : The details will be announced in Week 7.

Policies and penalties for late submission:

- all students must adhere strictly to the deadlines for submission of assignments; a medical certificate is required in the case of late work due to illness.
- penalties for late submission will be as follows: for each day late, 20% of the final grade will be deducted; e.g. if the assignment is submitted 3 days after the deadline, 60% of the final grade will be deducted

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 participate in the group project, attempt the term paper assignment and participate in the seminar presentation. To pass the course you should acheive a minimum of a grade D on any individual assessment component.

Passing NWEN 402

To pass NWEN 402, a student must satisfy mandatory requirements and gain at least a **C** grade overall.

Withdrawal

The last date for withdrawal from NWEN 402 with entitlement to a refund of tuition fees is Fri 23 July 2010. The last date for withdrawal without being regarded as having failed the course is Fri 24 Sept 2010 -- 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.