Systems Programming - Course Outline
NWEN 241: 2010 Trimester 1

This document sets out the workload and assessment requirements for NWEN 241. 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.

Objectives

Systems Programming 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. A full table of these attributes is available at Graduate Attributes.

By the end of the course, students are expected to have developed programming skills in C, Assembly and scripting languages and an introductory understanding of the key/distinctive C++ concepts. Specifically, students should:

1. Be able to use appropriate tools compiling/debugging C programs (GA 3(a), 3(d), 3(f)).
2. Be able to write C program using user-defined and library routines (GA 3(a), 3(b), 3(d), 3(f)).
3. Be able to write C programs demonstrating the capability of manipulating pointers and arrays, control constructs and user-defined data types (GA 3(a), 3(b), 3(e), 3(f)) .
4. Be able to write C programs performing input/output operations (GA 3(a), 3(b), 3(f)).
5. Be able to write C programs performing bit-level operations (GA 3(a), 3(b), 3(f)).
6. Be able to use or understand the main techniques of dynamic memory management in C/C++ (GA 3(a), 3(e), 3(f)).
7. Understand the key/distinctive features of C++ including constructors, destructors, overloading, polymorphism and templates (GA 3(d), 3(e)).
8. Be able to structure larger programs in multiple files (GA 3(e), 3(f)).
9. Be able to write simple Assembly programs (GA 3(a), 3(b), 3(e), 3(f)).
10. Be able to write simple scripting programs (GA 3(b), 3(e), 3(f)).

Textbook

Students will need a good book on each of the C, Assembly and scripting languages. The three textbooks selected are:

C Programming:
> Stephen G. Kochan, *Programming in C: A complete introduction to the C programming language* [3rd Edition], Sams Publishing, 2005.

Assembly Programming (Free Online Copy):
> Paul A. Carter, _PC Assembly Language_ , 2006.

Scripting (Free Online Copy):
> Machtelt Garrels, _Bash Guide for Beginners_ , 2008.

The C book can be bought at VUW book center. The other two books are available FREE online.

Additional reading material

A C++ book is higly recommended:
> S. Lippman, J. Lajoie, B. Moo, *C++ Primer* [4th Edition], Addison-Wesley, 2005.

A discussion on csh programming:

> Tom Christiansen, _Csh Programming Considered Harmful_ , 1996.

A more comprehensive guide to shell programming (much more than is needed for the course):
> Mendel Cooper, _Advanced Bash-Scripting Guide_ , 2009.

Lectures, Tutorials, Laboratories, and Practical work

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

Lectures for NWEN 241 are:

Day	Time	Room
Wednesday	1000-1050	MCLT101
Thursday	1000-1050	MCLT101

Tutorials for NWEN 241 are:

Day	Time	Room
Friday	1000-1050	EALT006

Timetable and sign-up for help desks is available here.

Tutorials and help desks start from Week 2.

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

Assignments and Projects

There are four programming labs for NWEN 241. All the programming tasks will be performed in UNIX environment. All the labs will be submitted through the online submission system. Lab demonstration will be used for assessment. Lab 1 is worth 10% of the final grade. Labs 2 and 3 are each worth 15% of the final grade. Lab 4 is worth 10%.

- Lab 1 involves writing scripting programs and familiarize you with the UNIX environment, serving objective 10.
- Labs 2 and 3 are about C programming, serving objectives 1 ~ 8.
- Lab 4 is about Assembly programming, serving objective 9.

Students may use the lab facilities at any time, provided other courses are not using the lab or you are not interfering with other courses. However, tutors will be available to help students at helpdesk times throughout the week. These times will be posted on the course web page. All the labs must be carried out **individually** and **independently**.

Workload

In order to maintain satisfactory progress in NWEN 241, you should plan to spend an average of 12.5 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 3 hours
- Reading and Practical work: 8-12 hours

The practical work includes labs and exercises set by the lecturers.

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

Staff

The course organiser for NWEN 241 is Qiang Fu. The lecturers for the course are Andy Linton and Qiang Fu. Their contact details are:

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

- Dr Qiang Fu
- Cotton 329
- +64 4 463 5233 x8829
- Qiang.Fu@ecs.vuw.ac.nz

Tutors

- Trevor Londt: londttrev@myvuw.ac.nz
- Lee Macri: macrilee@myvuw.ac.nz
- Bruce Mills: millsbruc@myvuw.ac.nz
- Jan Mulert: vonmulert@gmail.com

Announcements and Communication

The main means of communication outside of lecture will be the NWEN 241 web area at http://ecs.victoria.ac.nz/Courses/NWEN241_2010T1/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the NWEN 241 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 241 will be determined based on the following assessment weightings:

Item	Weight	Due
Lab 1	10%	Week 3
Lab 2	15%	Week 6
Lab 3	15%	Week 9
Lab 4	10%	Week 11
Final Examination	50%	TBD

You are expected to do all the labs.

You will find the approximate submission dates and times for labs

Late labs will be penalized 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.

The Exam

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 T1 is 7 June - 30 June 2010.

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 labs;
2. Obtain a D grade or better in the final exam.

Passing NWEN 241

To pass NWEN 241/COMP206, a student must satisfy mandatory requirements and gain at least a **C** grade overall.

Withdrawal

The last date for withdrawal from NWEN 241 with entitlement to a refund of tuition fees is Fri 12 March 2010. The last

date for withdrawal without being regarded as having failed the course is Fri 14 May 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.