Systems Programming

XMUT-NWEN 241 - 2026 T2

Introduction

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The NWEN 241 Team

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- Lecturer (part 2) — Richard Littauer
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- Co-teacher
- Tutors — Range of PhD students
- Students — You and the people around you
- Course URL: https://ecs.wgtn.ac.nz/Courses/XMUT241_2026T2

What's the course about?

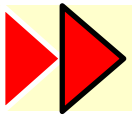
- Use appropriate tools for compiling/debugging C programs.
- Write C programs using pointers and arrays, user-defined data types, input/output operations, and user-defined and library routines.
- Use or understand the main techniques of dynamic memory management in C.
- Structure larger programs in multiple files.
- Understand the differences between application software and system software.

Background needed for NWEN 241

- This course assumes that you are familiar with or have taken courses that have dealt with the following topics:
  - Binary representation of numbers
  - Basic logic or Boolean algebra
  - Computer program design
  - Java programming

- Computer program design and Java programming are essentially covered in COMP 102 and COMP 103

- If you want to brush up on your knowledge of binary representation and basic logic: https://www.bottomupcs.com/chapter01.xhtml



Revise these concepts if necessary!

Observations about Engineering Courses

There is no gender divide. Female/male/other do just as well in this subject overall.

- Many were uncomfortable about asking questions:
  - in lectures and in labs

  because other students put them down
- Asking questions is the way you learn

- Putting people down for asking questions or for trying to learn is
  - unprofessional
  - obnoxious
  - unacceptable
  - not what the university is about

Lectures

- 2 Lectures: Mondays and Wednesdays
- 2 Labs:

- Slides
  - on the course webpage (PDF for each week)

See Course Wiki for more details about Lecture Schedule

- Questions:
  - WeChat or Emails

- Goals
  - Provide a framework for your learning
  - Provide explanations/demonstrations

Labs

- Lab: Systems

- PC workstations
  - Windows system
  - Compilers & debuggers: gcc, g++, gdb, and more
  - Text editors: kate, gedit, emacs, vi, vim, and more
  - IDE: Code::Blocks
  - Cygwin

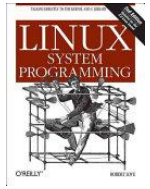
- Text editor vs IDE: IDE

Books and Other Resources (1/2)

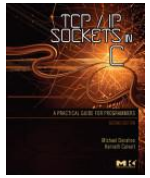
- No textbook required
- Good references:

Perry, Gregory, C Programming Absolute Beginner's Guide, Third Edition

Kochan, Stephen, Programming in C, Fourth Edition



Love, Robert, Linux System Programming, 2nd Edition



Donahoo, Michael,
TCP/IP Sockets in C, 2nd Edition

Malik D.S., C++ Programming: Program Design Including Data Structures

Books and Other Resources (2/2)

- Classic C programming reference:

Kernighan and Ritchie, The C Programming Language, 2nd Edition

- Lecture slides:
  - To be released on the course website
  - https://ecs.wgtn.ac.nz/Courses/XMUT241_2026T2/LectureSchedule

Assessment

Item	Weight
Attendance	10%
Assignments - 4 in total	24%
Exercises - 3 in total	6%
Tests 1 and Test 2	20%
Final Exam	40%

Note:

- If you fail the course the first time, and need to take the make-up exam, the make-up exam will only replace your tests and exam marks
- Your final grade will be 40% from your attendance, assignments, and exercises, and 60% from the make-up exam.

Assignments

- Critical for your learning!
  - 4 Assignments → total of 24% (will be marked by tutors in VUW)
  - 3 Exercises → total of 6% (will be marked automatically)
  - 2 weeks each
  - out: Monday due: Sunday (19:00)
  - Late assignments cannot be marked.
- Must be individual work.
  - We will talk about how to collaborate and help each other without plagiarism
- Programming Style will be a component of the marks (up to 15% off for bad code-writing style of code writing)

Penalties for late submission

- Work submitted:
  - 1 day after the deadline will receive a maximum mark of 90%,
  - 2 days after the deadline will receive a maximum mark of 80%,
  - 3 days after the deadline will receive a maximum mark of 70%,
  - 4 days after the deadline will receive a maximum mark of 60%.
  - 5 days after the deadline will receive a maximum mark of 50%.
  - 6 days after the deadline will not be marked = 0
- No work will be accepted after the marks are released unless previously arranged with the course organiser.

Getting Help.

Co-teacher and Lecturer

- Ask questions and get answers (During lectures or labs; emails and WeChat during **working hours**)
- NO posting chunks of ANSWERS to assignments!

PLAGIARISM UNACCEPTABLE

- We want you to LEARN, TALK to each other, learn TOGETHER, and HELP each other, but


PLAGIARISM is UNACCEPTABLE!


- Got help from anybody?

STATE IT ON THE ASSIGNMENT!

- Copied bits of code from anywhere other than lecture slides or textbook?

STATE IT ON THE ASSIGNMENT!

- Identical answers to peers' AI-generated responses will be considered plagiarism

Cheating in the assignments.

Assignments are primarily for learning

Cheating in the assignments is not worth it!

- You won't learn, so you will probably fail.
- If caught, you'll lose marks --- or worse.
  - Do not lend your work to others
  - Do not ask other students for their answers – it is stealing their marks.
- Ask for help
  - Lecturer, co-teacher and the School of International Education

Tests and Final Exam

- 2 Tests → total of 20%
- Final Exam → total of 40%
- If you get a higher mark in the exam than in the tests, we will increase your test mark to match your exam mark.
- Please check the course webpage regularly: https://ecs.wgtn.ac.nz/Courses/XMUT241_2026T2