School of
Engineering and Computer Science
Te Kura Mātai Pūkaha, Pūrorohiko

Prescription

This course considers the issues raised when programming at a low-level, for example in embedded systems, OS system level, or network protocol stacks. It includes an introduction to C language programming and motivating examples related to a wide variety of applications of system programming.

Course learning objectives

Students who pass this course should be able to:

1. Use appropriate tools compiling/debugging C/C++ programs.
2. Write C programs using pointers and arrays, user-defined data types, input/output operations, bit-level operations, and user-defined and library routines.
3. Understand the differences between C and C++, and write C++ programs using stream input/output, classes, vectors and templates.
4. Use or understand the main techniques of dynamic memory management in C and C++.
5. Structure larger programs in multiple files.
6. Understand the differences between application software and system software.

Withdrawal from Course

Withdrawal dates and process:
https://www.wgtn.ac.nz/students/study/course-additions-withdrawals

Lecturers

Alvin Valera (Coordinator)

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401 Alan MacDiarmid Building, Kelburn

Joshua Scott

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Jyoti Sahni

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Teaching Format

During the trimester there will be three lectures per week where the third lecture is a tutorial-style lecture. There are practical lab (programming) assignments that require students to apply the concepts taught during the lectures.

Student feedback

A summary of the course feedback provided by students previously for this course is available at http://www.cad.vuw.ac.nz/feedback/feedback_display.php.

Dates (trimester, teaching & break dates)

- Teaching: 02 March 2020 - 07 June 2020
- Break: 13 April 2020 - 27 April 2020
- Study period: 08 June 2020 - 11 June 2020
- Exam period: 12 June 2020 - 27 June 2020

Class Times and Room Numbers

02 March 2020 - 22 March 2020

- **Tuesday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn
- **Thursday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn
- **Friday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn

27 April 2020 - 07 June 2020

- **Tuesday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn
- **Thursday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn
- **Friday** 14:10 - 15:00 – LT205, Hugh Mackenzie, Kelburn

Other Classes

From Weeks 2-12, Helpdesk Sessions will be conducted in CO246. Tutor(s) will be present to assist students who have questions on exercises and assignments. See course wiki at https://ecs.wgtn.ac.nz/Courses/NWEN241_2020T1/ for more details.

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Recommended

There are many good C/C++ programming books available in the library. Below are some recommended books for this course:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language [2nd Edition], Prentice Hall, 1988.
- Perry, Gregory, C Programming Absolute Beginner's Guide, [Third Edition], Pearson Education,

2014.

- Kochan, Stephen, Programming in C [Fourth Edition], Addison-Wesley, 2015.
- Love, Robert, Linux System Programming [2nd Edition], O'Reilly, 2013.
- Donahoo, Michael, TCP/IP Sockets in C [2nd Edition], Morgan Kaufmann, 2009.
- D.S. Malik, C++ Programming [8th Edition], Cengage, 2017.

Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- Submit a reasonable attempt at 3 / 4 of the assignments.
- Obtain a **D** grade or better in the final exam.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

This course will be assessed through assignments, 2 terms tests, and a final examination.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments - 4 in total	As stated in the respective assignment handouts.	CLO: 1,2,3,4,5	20%
Term Test 1 (45 minutes)	Week 6	CLO: 1,2,3,4	15%
Term Test 2 (45 minutes)	Week 12	CLO: 1,2,3,4	15%
Examination (2 hours)	TBC (during examination period)	CLO: 2,3,4,5,6	50%

Penalties

1. Each assignment that is late (*i.e.*, submitted on the submission system after the deadline) will be penalised by 20% of the achieved marks if it is up to 24 hours late, and penalised by 40% if it is between 24 hours and 48 hours late. Any work submitted more than 48 hours after the deadline will receive 0 marks.
2. Each student will have 3 "late days" which you may choose to use for any programming assignment(s) during the course. There will be no penalty applied for these late days. You do not need to apply for these - any late days you have left will be automatically applied to lab assignments that you submit late.
3. The late days are intended to cover minor illnesses or other personal reasons for being late. You should only ask for extensions in the case of more significant or longer lasting problems (and you may need documentation). Do not waste "late days" on procrastination.

Extensions

Requests for assignment deadline extensions must be sent in writing (email) to the course coordinator, attaching any relevant supporting documents, e.g. medical certificate from doctor.

Submission & Return

1. Instructions on submission of assignments and return of work are available on the course wiki at https://ecs.wgtn.ac.nz/Courses/NWEN241_2020T1/.

Marking Criteria

As stated in the respective assignment handouts.

Group Work

There is no group work.

Peer Assessment

There will be no peer assessment.

Required Equipment

Refer to https://ecs.wgtn.ac.nz/Courses/NWEN241_2020T1/ for details.

Workload

The total workload for NWEN 241 is 150 hours. In order to maintain satisfactory progress in NWEN 241, you should plan to spend an average of 10 hours per week on this course.

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/NWEN241_2020T1/LectureSchedule

Communication of Additional Information

You must regularly check the course Wiki page at https://ecs.wgtn.ac.nz/Courses/NWEN241_2020T1/ for the latest information on the course, e.g. lecture schedule, assignments, reading materials, etc.

Links to General Course Information

- Academic Integrity and Plagiarism: https://www.wgtn.ac.nz/students/study/exams/integrity-plagiarism
- Academic Progress: https://www.wgtn.ac.nz/students/study/progress/academic-progess (including restrictions and non-engagement)
- Dates and deadlines: https://www.wgtn.ac.nz/students/study/dates
- Grades: https://www.wgtn.ac.nz/students/study/progress/grades
- Special passes: Refer to the Assessment Handbook, at https://www.wgtn.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf
- Statutes and policies, e.g. Student Conduct Statute: https://www.wgtn.ac.nz/about/governance/strategy
- Student support: https://www.wgtn.ac.nz/students/support
- Students with disabilities: https://www.wgtn.ac.nz/st_services/disability/
- Student Charter: https://www.wgtn.ac.nz/learning-teaching/learning-partnerships/student-charter
- Terms and Conditions: https://www.wgtn.ac.nz/study/apply-enrol/terms-conditions/student-contract

- Turnitin: http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin
- University structure: https://www.wgtn.ac.nz/about/governance/structure
- VUWSA: http://www.vuwsa.org.nz

Offering CRN: 18315

Points: 15
Prerequisites: COMP 103
Duration: 02 March 2020 - 28 June 2020
Starts: Trimester 1
Campus: Kelburn