NWEN 241
Systems Programming

Alvin C. Valera

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People (1)

Course Coordinator

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NWEN 241 Office Hours: Mondays, 13:00-16:00

Lecturer

Sue Chard

Assistant Lecturer

Kirita-Rose Escott
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People (2)

Tutors	Jakob Pfender Deepak Singh Carrie Yang Guiying Yang James Del Puerto Keiran Batten Mathias Ronimus Xinyu Zhu Alan Eir Murugaraj Odiathevar
Class Representative(s)	*Please e-mail me if you want to be a class representative*

NWEN 241 Changes

- Python is no longer covered
- C++ introduction is included
- Blackboard quizzes part of assessment
- More systems-oriented assignments

Course Assumptions

- This course assumes that you are familiar 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

Lecture Schedule

Week	Topics
1	Course introduction; C/C++ fundamentals; Operators, flow control, functions; Identifier scope, namespace; Arrays
2	User-defined types; C++ classes
3	Strings; Pointers
4	More on pointers
5	Dynamic memory allocation; Constructors and destructors
6	Vectors and templates
7	Command-line arguments; File I/O
8	Low-level programming
9	Data structures in systems programming
10	Process management: system calls
11	Process management: operating system kernel
12	Socket programming

C/C++ Programming

Systems Programming

Course Format

Monday	Tuesday	Wednesday	Thursday	Friday
[09:00-09:50] Lecture MCLT101		[09:00-09:50] Lecture MCLT101	[10:00-12:00] Helpdesk CO246	[09:00-09:50] Tutorial SUMT228
[15:00-17:00] Helpdesk CO246	[12:00-14:00] Helpdesk CO246	[15:00-17:00] Helpdesk CO246		[15:00-17:00] Helpdesk CO246

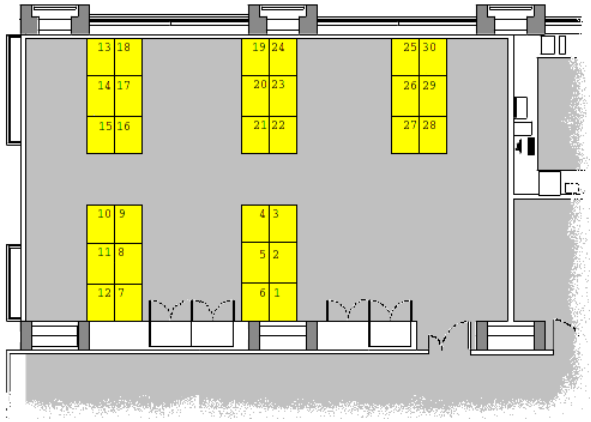
- Lecture and tutorial attendance not compulsory but essential aspects of the learning process
- Helpdesk sessions from Weeks 3-12 are optional; no signup is necessary

Optional Computer Lab on Week 2

- For those who want know more about the Linux programming environment
- Each session will be approximately 1 hour and will conducted in CO246. It will cover the following topics:
  - Basic Linux shell commands
  - Compiling with gcc and g++
  - Debugging with gdb
  - Working remotely
  - Transferring files
- There will be 10 sessions, each session will have a capacity of 20
- If you are interested, please sign-up here.

Helpdesk Sessions

- Lab: Systems and Network Lab (CO246)
  - ID access cards (Swipe Cards)
  - Should work if you are registered in NWEN 241



- PC workstations
  - Linux operating system, KDE as graphical user interface
  - Network file system: you can access your files from any of the PCs
  - Compilers & debuggers: gcc, g++, gdb, and more
  - Text editors: kate, gedit, emacs, vi, vim, and more

- Text editor vs IDE: Text editor

- Remote access: https://ecs.victoria.ac.nz/Support/TechNoteWorkingFromHome

Textbook and other resources

- No textbook required
- Good references:
  - Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language [2nd Edition], Prentice Hall, 1988.
  - Al Kelley and Ira Pohl, A Book on C [4th Edition], Addison-Wesley, 1998.
  - D.S. Malik, C++ Programming [8th Edition], Cengage, 2017.

- Lecture slides:
  - To be released a day before lecture in course website

Assessment

Component	Weight (%)
5 Programming Assignments	25
5 Blackboard Quizzes	5
Mid-Term Test (11 April 2019, 18:00-18:45)	15
Final Exam	55

Mandatory Course Requirement:

- Obtain a **D** grade or better in the final exam

Blackboard Quizzes

- **Short quizzes** to test your knowledge about concepts
- 5 quizzes in total, each quiz weighing 1% of the final grade
- Will be open for 48 hours upon release; no extensions will be granted

- See course website for details of the release dates and deadlines

Programming Assignments (1)

- **Programming tasks** to test your practical knowledge
- 5 assignments in total, each assignment weighing 5% of the final grade
- You will given 2 weeks to work on each of the assignments

- See course website for details of the release dates and deadlines

Programming Assignments (2)

Penalties for late submission:

- Each late submission will be penalised by
  - 20% of the achieved marks if it is up to 24 hours late, and
  - 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

Programming Assignments (3)

“Late days” credit

- Each student will have 3 “late days” which you may choose to use for any lab 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
- 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!

Course Wiki

- Link: https://ecs.victoria.ac.nz/Courses/NWEN241_2019T1/WebHome

- **Check the course wiki regularly!**