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

Prescription

Mathematical techniques employed by cybersecurity and software engineers, including methods of combinatorics, logic, probability, and decision theory. The course emphasises engineering applications.

Course learning objectives

Students who pass this course should be able to:

1. Know the important definitions and results in introductory logics and statistics.
2. Understand their significance to computer science and dealing with data.
3. Demonstrate your understanding by stating definitions and results, and solving simple problems.

Course content

Trimester 2, 2021:
The course is primarily offered in-person, but there will also be a remote option and there will be online alternatives for all the components of the course for students who cannot attend in-person. Lectures will be in the classroom and will be recorded. Course notes with course material will be made available as the course progresses. Assignments will be posted online and submitted using an online system. Tutorials will primarily be in-person but there will be a Zoom option.

Students taking this course remotely must have access to a computer with camera and microphone and a reliable high speed internet connection that will support real-time video plus audio connections and screen sharing. Students must be able to use Zoom; other communication applications may also be used. A mobile phone connection only is not considered sufficient.

The assessment of the course includes two tests. Under alert level 1, the tests will be run in-person on the Kelburn campus. There will be a remote option for students who cannot attend in-person, but this remote option will be limited to students with a strong justification (for example, being enrolled from overseas). The remote test option will be online supervision of tests. Students who will need to use the remote test option must contact the course coordinator in the first two weeks to get permission and make arrangements.

This course covers ideas in logic, combinatorics, probability and statistics. On the logic combinatorics side, we will study propositional logic, introductory graph theory, proofs, sets and relations, and induction and recursion. On the probability and statistics side, we will study data and sampling, probabilities and random variables, estimation and confidence intervals, and model fitting.

Withdrawal from Course

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

Lecturers

Dr Steven Archer (Coordinator)

steven.archer@vuw.ac.nz 04 886 4493

CO 363 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

Prof Peter Smith

peter.smith@vuw.ac.nz 04 463 6738

CO 539 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

Teaching Format

During the trimester, there will be three 2-hour lectures per week. Students attend one 2-hour lab most weeks on Thursday, and students are also encouraged to attend one 2-hour tutorial session each week on Thursday.
Tutorials and labs start in week one.

Student feedback

Student feedback on University courses may be found at:
www.cad.vuw.ac.nz/feedback/feedback_display.php

Dates (trimester, teaching & break dates)

- Teaching: 08 November 2021 - 19 December 2021

Class Times and Room Numbers

08 November 2021 - 19 December 2021

- **Monday** 10:00 - 11:50 – LT122, Cotton, Kelburn
- **Wednesday** 10:00 - 11:50 – LT122, Cotton, Kelburn
- **Friday** 10:00 - 11:50 – LT122, Cotton, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

There are no mandatory course requirements for this course.

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 internally assessed through 4 assignments, 4 lab reports and 2 tests.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments	Weeks 2,3,4,5. See website for details.	CLO: 1,2,3	25%
Mid-course test	Week 4. See website for details.	CLO: 1,2,3	25%
Lab reports	Weeks 2,3,4,6. See website for details.	CLO: 1,2,3	25%
Final test	Week 6. See website for details.	CLO: 1,2,3	25%

Penalties

See either Blackboard or the course homepage for details.

Extensions

Extensions are not given for assignments or labs. Late assignments will not be marked. Lab reports that are more than five days late are not marked.

Submission & Return

See the course website for details of when assignments are due.

Workload

Students should expect to spend at least 20 hours a week – including time spent in lectures, labs and tutorials, completing assignments and reviewing notes.

Teaching Plan

Communication of Additional Information

Announcements, class notes, and assignments will be posted on the website (either through blackboard or the course homepage), which will be updated frequently.

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: 31159

Points: 15
Prerequisites: ENGR 121;
Restrictions: the pair MATH 161, (MATH 177, QUAN 102 or STAT 193)
Duration: 08 November 2021 - 19 December 2021
Starts: Trimester 3
Campus: Kelburn