

School of Engineering and Computer Science

Te Kura Mātai Pūkaha, Pūrorohiko



Prescription

An introduction to the range of mathematical techniques employed by engineers, including functions and calculus, linear algebra and vector geometry, probability and statistics. There is an emphasis on applications and modelling.

Course learning objectives

Students who pass this course should be able to:

1. Read, interpret and manipulate mathematical expressions and equations in a variety of contexts.
2. Apply mathematical concepts and techniques to analyse engineering systems and solve engineering problems.
3. Demonstrate mastery of a range of fundamental mathematical techniques.
4. Creatively and collaboratively combine skills and knowledge from mathematics, physics, computing and engineering to model an engineering problem.

Course content

Probability, sets, number, functions, logic, algebraic techniques, trig functions, sequences, series, limits, differentiation, integration, vectors, matrix algebra.

Required Academic Background

Sixteen credits of NCEA Level 3 Mathematics and Statistics

Withdrawal from Course

Withdrawal dates and process:

<https://www.victoria.ac.nz/students/study/course-additions-withdrawals>

Lecturers

Mark McGuinness (Coordinator)

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323 Cotton, Kelburn

Howard Lukefahr

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334 Cotton, Kelburn

Teaching Format

Four lectures, one tutorial, and one two-hour lab most weeks. Lectures are recorded to video and available to students through BlackBoard.

Student feedback

Feedback from previous students is available at http://www.cad.vuw.ac.nz/feedback/feedback_display.php

Dates (trimester, teaching & break dates)

- Teaching: 08 July 2019 - 13 October 2019
- Break: 19 August 2019 - 01 September 2019
- Study period: 14 October 2019 - 17 October 2019
- Exam period: 18 October 2019 - 09 November 2019

Class Times and Room Numbers

08 July 2019 - 18 August 2019

- **Monday** 14:10 - 15:00 – LT206, Easterfield, Kelburn
- **Tuesday** 14:10 - 15:00 – LT118, Laby, Kelburn
- **Wednesday** 14:10 - 15:00 – LT118, Laby, Kelburn
- **Friday** 14:10 - 15:00 – LT122, Cotton, Kelburn

02 September 2019 - 13 October 2019

- **Monday** 14:10 - 15:00 – LT206, Easterfield, Kelburn
- **Tuesday** 14:10 - 15:00 – LT118, Laby, Kelburn
- **Wednesday** 14:10 - 15:00 – LT118, Laby, Kelburn
- **Friday** 14:10 - 15:00 – LT122, Cotton, Kelburn

Other Classes

A two-hour lab each week, for eight of the weeks available.

One hour tutorial each week

Set Texts and Recommended Readings

Required

There is no set text for this course. Detailed typeset lecture notes are made available online in the Home Pages.

Recommended

There is no set text for this course, but we follow Croft et al, the recommended text, very closely. It is also the text for ENGR 122, and can be purchased from Vic Books. Stroud's book is also recommended if students want to read further.

- *Engineering Mathematics: a Foundation for Electronic, Electrical, Communications and Systems Engineers*, 4th edition or later, by Anthony Croft, Robert Davison, Martin Hargreaves and James Flint, Pearson, 2012 or later.
- *Engineering Mathematics*, by K.A. Stroud, with Dexter J. Booth. Palgrave MacMillan, London.

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

Assignments, lab reports, Tests, and final exam are used to calculate an overall percentage on which your final grade is based.

Assignments can earn up to 10% in total, two Tests up to 10% each, and the four lab reports a total of 20%. The final exam is worth at least 50%, up to 80%, depending on whether it has a better mark than assignments and Tests.

If a student does poorly in either assignments or the two Tests, the low-scoring assessments are not counted. The marks from these are then loaded onto the final exam if that gives a better overall mark. Lab reports are always counted, however. So if a student aces the final exam, for example, but does poorly in assignments and both tests, the exam might be worth 80% and the lab reports 20%, and the low marks would not be used.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments (best six out of eight)	weekly	CLO: 1,2,3,4	10%
Labs		CLO: 1,2,3,4	20%
Tests (two)		CLO: 1,2,3,4	20%
Final Exam		CLO: 1,2,3,4	50%

Penalties

Late assignments will not be marked . You can miss up to two (out of eight) assignments without losing any credit.

Late lab reports will result in lost marks, 10% loss for each day up to five days late. Later reports will not be marked.

Any plagiarism is likely to result in zero marks for both parties.

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

All lab reports and assignments are submitted through the ECS online system, accessed through the ENGR 121 home pages.

Lab, assignment and test results are posted on the ECS online system. Feedback on lab reports and assignments are provided through the course Home page.

Collect feedback on tests from the School of Engineering Office in CO358 at designated times.

Marking Criteria

Assignments are marked as a feedback to the student on how they are doing. If the feedback mark is 40% or better, the assignment is classed as "satisfactory". If a student gets all but two (six out of eight, say) satisfactory assignments, or better, the resulting assignment mark awarded is the full 10%. Fewer satisfactory assignments attract a proportion of the 10% available. If an assignment is unsatisfactory because it gets 20%, say, then it would still get half the marks of a satisfactory assignment. Late assignments are not marked, mainly because there is one every week, and partly because two can be missed without penalty.

Workload

In order to maintain satisfactory progress in ENGR 121, plan to spend about eleven hours a week during lecture times. One breakdown of this would be four hours in lectures, two hours in labs, one hour in a tutorial, two hours writing reports and assignments, and two hours reading and reviewing notes and tuts.

Teaching Plan

Communication of Additional Information

The course homepages on the web are the primary source of additional information. There will be links to these from Blackboard and from ECS and SMS course list web pages. Lectures will be recorded to video, available from the next day through Blackboard.

Links to General Course Information

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

Offering CRN: [31158](#)

Points: 15

Prerequisites: 16 AS credits NCEA Level 3 Mathematics (or equivalent) or MATH 132;

Restrictions: Any pair (MATH 141/QUAN 111, MATH 151/161/177)

Duration: 08 July 2019 - 10 November 2019

Starts: Trimester 2

Campus: Kelburn