



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

This course can be taken fully online. The following on campus activities are available in this course: lectures, tutorials, labs, staff office hours, drop in help sessions. There will be online alternatives to these, but students are encouraged to attend these sessions where possible. All lecture material will be recorded and made available to students online.

Topics covered in this course include: 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.wgtn.ac.nz/students/study/course-additions-withdrawals>

Lecturers

David Cox (Coordinator)

david.cox@vuw.ac.nz 04 4636788

537 Cotton, Kelburn

Emma Greenbank

emma.greenbank@vuw.ac.nz 04 4635323

548 Cotton, Kelburn

Howard Lukefahr

howard.lukefahr@vuw.ac.nz

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: 13 July 2020 - 18 October 2020
- Break: 17 August 2020 - 30 August 2020
- Exam period: 19 October 2020 - 25 October 2020

Class Times and Room Numbers

13 July 2020 - 16 August 2020

- **Monday** 10:00 - 10:50 – LT205, Hugh Mackenzie, Kelburn
- **Wednesday** 10:00 - 10:50 – LT002, Hugh Mackenzie, Kelburn
- **Thursday** 09:00 - 09:50 – LT205, Hugh Mackenzie, Kelburn
- **Friday** 10:00 - 10:50 – LT205, Hugh Mackenzie, Kelburn

31 August 2020 - 18 October 2020

- **Monday** 10:00 - 10:50 – LT205, Hugh Mackenzie, Kelburn
- **Wednesday** 10:00 - 10:50 – LT002, Hugh Mackenzie, Kelburn
- **Thursday** 09:00 - 09:50 – LT205, Hugh Mackenzie, Kelburn
- **Friday** 10:00 - 10:50 – LT205, Hugh Mackenzie, 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

This course is assessed through a combination of assignments, tests and lab reports. The 6 best assignments out of 8 will be counted towards the student's final grade. The best 3 lab reports out of 4 will be counted towards the student's final grade. If a student does poorly in assignments, the best test will be given a 50% weighting and total assignment mark not counted. In order to gain maximum marks, it is highly recommended students sit both tests for this course.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments (best 6 out of 8)	Most Weeks	CLO: 1,2,3,4	25%
Lab Reports (best 3 out of 4)	Every 3 weeks	CLO: 1,2,3,4	25%
Tests (2)	Week 7, 12	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

All assignments have the same value and will be marked fully. You will be provided with a marking schedule which you should check against your marked work. Your best 6 assignments will make up the allocated 25% total value.

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.wgtn.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <https://www.wgtn.ac.nz/students/study/progress/academic-progress> (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-enroll/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: [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: 13 July 2020 - 25 October 2020

Starts: Trimester 2

Campus: Kelburn