



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

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.

Topics covered in this course include: sets, number, functions, logic, algebraic techniques, trig functions, sequences, series, limits, differentiation, integration, vectors, matrix algebra and probability.

Required Academic Background

In 2021-2022, 12 credits of NCEA Level 3 in Mathematics/Statistics (or equivalent) will be accepted for entry, due to disruptions to teaching, learning and assessment caused by COVID-19.

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

Dillon Mayhew

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435 Cotton, Kelburn

Howard Lukefahr

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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: 05 July 2021 - 08 October 2021
- Break: 16 August 2021 - 29 August 2021
- Study period: 11 October 2021 - 14 October 2021
- Exam period: 15 October 2021 - 06 November 2021

Class Times and Room Numbers

05 July 2021 - 15 August 2021

- **Monday** 10:00 - 10:50 – LT118, Laby, Kelburn
- **Tuesday** 10:00 - 10:50 – LT118, Laby, Kelburn
- **Thursday** 10:00 - 10:50 – LT118, Laby, Kelburn
- **Friday** 10:00 - 10:50 – LT118, Laby, Kelburn

30 August 2021 - 10 October 2021

- **Monday** 10:00 - 10:50 – LT118, Laby, Kelburn

- **Tuesday** 10:00 - 10:50 – LT118, Laby, Kelburn
- **Thursday** 10:00 - 10:50 – LT118, Laby, Kelburn
- **Friday** 10:00 - 10:50 – LT118, Laby, 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. In order to gain maximum marks, it is highly recommended students attempt all assessments.

This assessment information is subject to change.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments (8)	Most Weeks	CLO: 1,2,3,4	25%
Lab Reports (4)	Every 3 weeks	CLO: 1,2,3,4	25%
Tests (2)	Week 7 and assessment period	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.

Labs, assignments, test results and feedback are all posted on the ECS online system.

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.

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-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: [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: 05 July 2021 - 07 November 2021

Starts: Trimester 2

Campus: Kelburn