



Prescription

Further mathematical techniques employed by electronic and computer systems engineers, with emphasis on methods of calculus, differential equations and linear Algebra. There is an emphasis on engineering applications and use of software.

Course learning objectives

Students who pass this course will be able to:

1. Interpret, manipulate and derive expressions and properties of differential and integral calculus, and linear algebra.
2. Apply concepts and techniques of calculus and linear algebra to analyse engineering systems and solve engineering problems.
3. Demonstrate mastery of a range of fundamental techniques for solving problems in calculus and linear algebra.
4. Demonstrate an ability to effectively use approximation and numerical techniques, especially in the estimation of physical parameters.
5. 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. There will be online alternatives to these, but students are encouraged to attend these on campus where possible.

- Lectures
- Tutorials
- Staff office hour
- Laboratory classes
- Drop in help desk sessions

Lecture content will be recorded and made available online.

Material to be covered:

Complex numbers; Introduction to linear algebra; Applications of differentiation; Integration of functions; Functions of several variables; Introduction to ordinary differential equations

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Mark McGuinness (Coordinator)

Mark.McGuinness@vuw.ac.nz 04 4635059

323 Cotton, Kelburn

Dimitrios Mitsotakis

dimitrios.mitsotakis@vuw.ac.nz 04 4636739

441 Cotton, Kelburn

Teaching Format

During the trimester, there will be four lectures per week most weeks, with a total of 30 lectures. Lectures are recorded to video and available to students for review. Students may attend in person, or online.

Students attend one two-hour lab most weeks, and students are also encouraged to attend one tutorial session each week. Sign-ups for labs and tuts will be in the first week of lectures using myAllocator. Labs and tuts start in week two.

A Reading Plan, based on the lecture notes provided online, will be set up in advance for each week. Lecture times will be used for a brief piece of instruction, followed by a question and answer session. Lectures will be recorded to video and live streamed so that students can attend in person or online. A number of brief instructional videos will be posted to support students' learning each week.

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

31 August 2020 - 18 October 2020

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

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

Other Classes

Students are encouraged to attend at least one tutorial each week, on campus or online. Labs are held fortnightly and may be attended on campus or online. Signup for Tutorials and Labs is in the first week of Trimester.

Set Texts and Recommended Readings

Required

A reading plan will be posted in advance online. These readings will be based on the provided lecture notes.

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 assessed through a combination of weekly assignments, lab reports and tests. The best 6 of 8 weekly assignments will be counted towards the students final grade. The best 3 of 4 lab reports will be counted towards the final grade also.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
8 assignments (best 6 out of 8)	Weekly	CLO: 1,2,3,4	25%
Two in-course online tests (each 2 hours)	Weeks 6 and 12	CLO: 1,2,3,4	50%
4 Lab reports (best 3 of 4)	Every 3 weeks	CLO: 1,2,3,4,5	25%

Penalties

Late assignments will not be marked. Late lab reports may lose marks.

Extensions

Extensions will be given if circumstances require. Please communicate these circumstances to the course coordinator, before the due date. Because assignments are weekly, extensions for assignments are rare and can only be for a day or two.

Submission & Return

Assignments and lab reports will be submitted online through the course website. It is important for students to immediately check the file they have uploaded, by downloading it, to ensure it is the correct file. Feedback on marked assignments and reports will be provided online.

Marking Criteria

If it is in the student's favour, the overall assignments mark will be ignored and the best Test mark will be given a 50% weighting.

Workload

In order to maintain satisfactory progress in ENGR 122, you should plan to spend an average of at least fourteen hours per week or a total of 150 hours on this course.

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-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: [26053](#)

Points: 15

Prerequisites: ENGR 121 or MATH 141;

Restrictions: the pair (MATH 142, 151)

Duration: 13 July 2020 - 25 October 2020

Starts: Trimester 2

Campus: Kelburn

