



## Prescription

The course introduces analysis techniques for signals and linear time-invariant systems. It includes Discrete and Continuous Fourier transform techniques, with applications to circuit analysis and communication systems.

## Course learning objectives

Students who pass this course will be able to:

1. Design, operate, and analyse continuous-time and discrete-time linear time-invariant systems. (BE graduate attribute 3(a)).
2. Calculate continuous-time & discrete-time Fourier transforms from 1st principles & by using a tables of common transforms and known properties and use Fourier transforms in the characterisation of systems and signals (BE graduate attribute 3(a), 3(c)).
3. Select proper configurations for analog-to-digital and digital-to-analog conversion systems, and to identify problems resulting from incorrect conversion design (BE graduate attribute 3(c)) and 3(d)).
4. Use an appropriate programming language to solve problems in statistics, linear systems and signals (BE graduate attributes 3(f)).

## Required Academic Background

Familiarity with calculus and with algebra involving complex numbers.

## Withdrawal from Course

Withdrawal dates and process:

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

## Lecturers

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### Pawel Dmochowski (Coordinator)

pawel.dmochowski@vuw.ac.nz 04 4635948

419 Alan MacDiarmid Building, Kelburn

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### Paul Teal

paul.teal@vuw.ac.nz 04 4635966

420 Alan MacDiarmid Building, Kelburn

# Teaching Format

During the trimester there will be three lectures a week.

## Student feedback

Towards the end of the course, student surveys on both the course lecturing and the course itself will be carried out. The results of previous course surveys can be found at [http://www.cad.vuw.ac.nz/feedback/feedback\\_display.php](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

- **Tuesday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Wednesday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Thursday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Friday** 13:10 - 14:00 – LT102, Murphy, Kelburn

### 02 September 2019 - 13 October 2019

- **Tuesday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Wednesday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Thursday** 13:10 - 14:00 – LT105, Alan MacDiarmid Building, Kelburn
- **Friday** 13:10 - 14:00 – LT102, Murphy, Kelburn

## Other Classes

There will be five laboratory exercises to be completed during the course. CO239 is booked for 9am to 1pm on Mondays and 8am to 12pm on Thursdays for ECEN220 for these laboratory exercises to be completed.

## Set Texts and Recommended Readings

### Required

There are no required texts for this offering.

## Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- Achieve a grade of at least 40% for the final exam.
- Achieve an overall score of at least 50% for the homework.

- Submit satisfactory lab reports for all labs.

*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 assignments, labs, tests, and a final examination.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignments		CLO: 1,2,3,4	15%
Labs		CLO: 1,2,3,4	10%
Tests		CLO: 1,2,3,4	30%
Exam (2 hours)		CLO: 1,2,3,4	45%

## Penalties

All work is due in on the due date at the due time. Marks will be deducted at a rate of 10% of the full mark for each working day late. Work will not be marked if more than one week late or if the model answers have already been handed back to the class. **Any work that is late (after the due date) should not be put in the drop boxes but should be directly handed to the course lecturer.**

## Extensions

Individual extensions will only be granted in exceptional personal circumstances, and should be negotiated with the course coordinator before the deadline whenever possible. Documentation (eg, medical certificate) may be required.

## Submission & Return

Drop boxes on the second floor of the Cotton building will be used for handing in of both laboratories reports and assignments. Any work that is late (after the due date) should not be put in the drop boxes but should be directly handed to the course lecturer. Marked material will be handed back in class or lab or can be collected from the ECS school office on the third floor of Cotton (CO358).

## Workload

To maintain satisfactory progress in ECEN 220, you should plan to spend an average of ten hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 3 hours
- Reading: 3 hours
- Assignments and Labs: 4 hours

## Teaching Plan

See [https://ecs.victoria.ac.nz/Courses/ECEN220\\_2019T2/LectureSchedule](https://ecs.victoria.ac.nz/Courses/ECEN220_2019T2/LectureSchedule)

# Communication of Additional Information

All online material for this course can be accessed at [https://ecs.victoria.ac.nz/Courses/ECEN220\\_2019T2/](https://ecs.victoria.ac.nz/Courses/ECEN220_2019T2/)

## 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/](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:** [18511](#)

**Points:** 15

**Prerequisites:** (ENGR 121, 122) or (MATH 142, 151)

**Duration:** 08 July 2019 - 10 November 2019

**Starts:** Trimester 2

**Campus:** Kelburn