



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.wgtn.ac.nz/students/study/course-additions-withdrawals>

Lecturers

Pawel Dmochowski (Coordinator)

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Teaching Format

This course will be offered in-person and online. For students in Wellington, there will be a combination of in-person components and web/internet based resources. It will also be possible to take the course entirely online for those who cannot attend on campus, with all the components provided in-person also made available online.

During the trimester there will be three lectures a week. There will also be a weekly 2 hour tutorial/lab session to work through problem sets and lab exercise with tutor's assistance.

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

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** 16:10 - 17:00 – LT119, Hunter, Kelburn
- **Tuesday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Thursday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Friday** 16:10 - 17:00 – LT118, Laby, Kelburn

31 August 2020 - 18 October 2020

- **Monday** 16:10 - 17:00 – LT119, Hunter, Kelburn
- **Tuesday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Thursday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Friday** 16:10 - 17:00 – LT118, Laby, Kelburn

Other Classes

There will be five laboratory exercises to be completed during the course. CO249 is booked for 9am to 12pm on Fridays for ECEN220 for these laboratory exercises to be completed. During weeks with no laboratory exercises, these sessions will be used for working through problem sets.

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% on 3 of 4 tests.
- Submit satisfactory lab reports for 4 of 5 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 labs and tests.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Labs (5)		CLO: 1,2,3,4	20%
Tests (4)		CLO: 1,2,3,4	80%

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 laboratories . 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.wgtn.ac.nz/Courses/ECEN220_2020T2/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/ECEN220_2020T2/

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: [18511](#)

Points: 15

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

Duration: 13 July 2020 - 25 October 2020

Starts: Trimester 2

Campus: Kelburn