School of
Engineering and Computer Science
Te Kura Mātai Pūkaha, Pūrorohiko

# Prescription

The course introduces analysis techniques for signals and linear time-invariant systems as well as fundamentals of engineering statistics. The first part of the course focuses on continuous time signals and systems and Fourier transform techniques, with applications to circuit analysis and communication systems. The second part of the course introduces probability mass and density functions, random variables and functions of random variables.

# Course learning objectives

Students who pass this course should be able to:

1. Analyse continuous-time signals and linear time-invariant systems. (BE graduate attribute 3(a)).
2. Derive continuous-time Fourier transforms and use them in the characterisation of systems and signals (BE graduate attribute 3(a), 3(c)).
3. Use random variables to model observations in engineering applications. (BE graduate attribute 3(a), 3(c)).
4. Select an appropriate standard family of probability mass or density functions for a task, and estimate its parameters (BE graduate attribute 3(a), 3(c)).
5. Use an appropriate programming language to solve problems in statistics, linear systems and signals encountered by engineers (BE graduate attributes 3(f)).

# Course content

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.

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 computer must be adequate to support the programming required by the course: almost any modern windows, macintosh, or unix laptop or desktop computer will be sufficient, but an Android or IOS tablet will not.

If the assessment of the course includes tests, the tests will generally be run in-person on the Kelburn campus. There will be a remote option for students who cannot attend in-person and who have a strong justification (for example, being enrolled from overseas).
The remote test option will use Zoom for online supervision of the tests and you must be able to use Zoom with a camera, microphone, and screen-sharing. 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.
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# Withdrawal from Course

Withdrawal dates and process:
https://www.wgtn.ac.nz/students/study/course-additions-withdrawals

# Lecturers


## Paul Teal (Coordinator)

paul.teal@vuw.ac.nz 04 4635966

420 Alan MacDiarmid Building, Kelburn

## Pawel Dmochowski

pawel.dmochowski@vuw.ac.nz 04 4635948

419 Alan MacDiarmid Building, Kelburn


# Teaching Format

Taught during face-to-face lectures and tutorials. The latter will be primarily used to work through example problems. Labs will feature programming exercises using Matlab, Python or similar.

# 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: 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** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Wednesday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Thursday** 16:10 - 17:00 – LT102, Murphy, Kelburn

**30 August 2021 - 10 October 2021**

- **Monday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Wednesday** 16:10 - 17:00 – LT102, Murphy, Kelburn
- **Thursday** 16:10 - 17:00 – LT102, Murphy, Kelburn

# Other Classes

Several laboratory sessions will be held in Cotton 249. A laboratory demonstrator will be available for a subset of that time, but there should be no expectation of demonstrator assistance at other times. Students may make use of the laboratories outside of the specified time when the lab is otherwise

unoccupied.

# Set Texts and Recommended Readings

## Required

There are no required texts for this offering.

# 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

| Assessment Item | Due Date or Test Date | CLO(s) | Percentage |
|---|---|---|---|
| 10 weekly assignments (2 hrs each) | TBC | CLO: 1,2,3,4 | 20% |
| 4 lab exercises done in the lab sessions (total 16 hours) | TBC | CLO: 1,2,3,4,5 | 10% |
| 4 tests (1 hour duration each) | TBC | CLO: 1,2,3,4 | 70% |

## 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

Extensions will be given only in exceptional circumstances, and if agreed **before** the due date.

## Submission & Return

Assignments should be submitted by using the online submission system.

Assessment items will be returned during classes. If you miss the collection of an item please see the lecturer.

Bachelor of Engineering students should be aware that copies of their assessed work may be retained for inspection by an accreditation panel.

# Workload

The student workload for this course is 150 hours.

# Teaching Plan

See: https://ecs.wgtn.ac.nz/Courses/EEEN220_2021T2/LectureSchedule

# Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/EEEN220_2021T2/

# 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-progess (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: 33057**

**Points:** 15
**Prerequisites:** (ENGR 121,122) or (MATH 142, 151);
**Restrictions:** ECEN 220
**Duration:** 05 July 2021 - 07 November 2021
**Starts:** Trimester 2
**Campus:** Kelburn