



Prescription

The course introduces analysis techniques for discrete-time signals and linear time-invariant systems as well as topics in engineering statistics. The first part of the course focuses on discrete-time signals and systems and discrete Fourier transform techniques, with applications to circuit analysis and communication systems. The second part of the course covers topics in engineering statistics, including confidence intervals, statistical tests, and regression, as applied to engineering problems.

Course learning objectives

Students who pass this course should be able to:

1. Apply sampling theory as applied to continuous-to-discrete-time signal conversion. (BE graduate attribute 3(a))
2. Analyse discrete-time signals and linear time-invariant systems. (BE graduate attribute 3(a))
3. Derive discrete-time Fourier transforms and use them in the characterisation of systems and signals (BE graduate attribute 3(a), 3(c))
4. Apply statistical tests to and compute confidence intervals for observed data. (BE graduate attribute 3(a), 3(c))
5. Identify relationships between sets of data using linear regression. (BE graduate attribute 3(a), 3(c))
6. Use an appropriate programming language to solve problems in statistics, linear systems and signals encountered by engineers. (BE graduate attributes 3(f))

Course content

2022: The course is primarily offered in-person, and there are components such as tests, labs, tutorials, and marking sessions which require in-person attendance.

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.

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Dr Paul Teal (Coordinator)

paul.teal@vuw.ac.nz 04 463 5966

AM 420 Alan Macdiamid Building, Gate 7, Kelburn Parade, Kelburn

Dr Pawel Dmochowski

pawel.dmochowski@vuw.ac.nz 04 463 5948

AM 419 Alan Macdiamid Building, Gate 7, Kelburn Parade, Kelburn

Teaching Format

Taught using face-to-face lectures and tutorials. The latter will be primarily used to work through example problems. Students will need to spend considerable time studying the material introduced in lectures. Labs will feature programming exercises using Matlab, Python or similar.

Student feedback

Towards the end of the course, student surveys 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: 11 July 2022 - 14 October 2022
- Break: 22 August 2022 - 04 September 2022
- Study period: 17 October 2022 - 20 October 2022
- Exam period: 21 October 2022 - 12 November 2022

Class Times and Room Numbers

11 July 2022 - 21 August 2022

- **Tuesday** 14:10 - 15:00 – LT220, Murphy, Kelburn
- **Thursday** 14:10 - 15:00 – LT102, Murphy, Kelburn
- **Friday** 14:10 - 15:00 – LT220, Murphy, Kelburn

05 September 2022 - 16 October 2022

- **Tuesday** 14:10 - 15:00 – LT220, Murphy, Kelburn
- **Thursday** 14:10 - 15:00 – LT102, Murphy, Kelburn
- **Friday** 14:10 - 15:00 – LT220, 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

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

- Achieve a grade of at least 40% in each of the tests.
- Submit reports demonstrating completion of 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

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
8 Assignments (3 hours each)	TBC	CLO: 1,2,3,4,5	24%
4 Lab reports (4 hours each)	TBC	CLO: 1,2,3,4,5,6	16%
2 Tests (1 hour each)	Weeks 6, 12	CLO: 1,2,3,4,5	60%

Penalties

Assignments will be marked promptly, so late submissions will not normally be possible. In special circumstances late submissions may be accepted, but will incur penalties.

Extensions

Extensions will be given only in exceptional circumstances, and if agreed **before** the due date. This is especially true of the **Assignments** which will be marked rapidly, with solutions distributed soon after the submission deadlines.

Submission & Return

Assignments should be submitted by using the online submission system.

Assessment items will be returned during classes.

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/EEEN320_2022T2/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/EEEN320_2022T2/

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: [34005](#)

Points: 15

Prerequisites: EEEN 220 (or ECEN 220)

Restrictions: ECEN 321

Duration: 11 July 2022 - 13 November 2022

Starts: Trimester 2

Campus: Kelburn