

SIGNALS & SYSTEMS

Module code: EE301

Credits: 5 Semester: 1

Department: ELECTRONIC ENGINEERING

International: 🗸



Overview

See full module descriptor at http://www.nuim.ie/electronic-engineering/current-students/moduledescriptors

Learning Outcomes

On successful completion of the module, students should be able to:

- 1. Represent and analyse signals in the time and frequency domains.
- 2. Represent and analyse linear, time-invariant systems in the time and frequency domains.
- 3. Perform continuous-time and discrete-time convolution of signals.
- 4. Compute the continuous-time and discrete-time Fourier transform of signals and systems. 5. Explain the fundamentals of sampling theory, alias and repeat spectra. 6. Compute the Ztransform of discrete-time signals and systems. 7. Compute the discrete Fourier transform of discrete-time signals and systems.
- 8. Determine the state equations of a system from its transfer function. 9. Solve the state equations of a system.
- 10. Determine whether a system is completely controllable and observable.
- 11. Determine the frequency-response of a system using a white noise input.
- 12. Compute the periodgram of a signal. 13. Analyse the frequency content of a signal using Bartlett's method. 14. Work as part of a team.

Teaching & Learning methods

• Lectures 12hrs, Tutorials 12hrs, Planned Learning 40hrs, Independent study 59hrs, Class Test 2hrs.

Delivery methods	Hours
Lectures	12
Labs / Practicals	0
Tutorials	12
Planned learning activities	40
Independent student activities	59
Total	123

- Module Graded (numeric value) or Ungraded (Pass/Not Passed): Graded
- **Continuous Assessment detail(s):** 30% Class Test, 70% Group Project Report and Individual interview.

Assessment type	Weighting	Duration
Continuous Assessment	100%	
University scheduled written examination	0%	
Other	0%	
Total	100%	

- Pass standard: 40%
- The Pass Mark is 40% students are not required to pass the written and continuous components separately.
- **Penalties:** Continuous assessments components cannot be repeated, in general. Late submission of reports will be subject to a penalty of 10% of the assessment grade for each day (or part thereof) overdue.

Repeat options

- Are Supplemental registrations permitted? Yes
- This module is 100% continually assessed. Hence, there is no repeat Autumn examination, as there is no facility available for repeating the continuous assessment elements of the module. However, students who obtain between 30 40% are eligible for supplemental assessment over the summer period. In such instances, the final module grade will be capped at 40%.
- Is Supplemental Continuous Assessment registration permitted? Written permission from Department
- Is Supplemental Continuous Assessment capped? Yes

Pre-Requisites

• Engineering Mathematics 1: EE106 Engineering Mathematics 2: EE112 Differential Equations and Transform Methods: EE206 Introduction to Signal Processing: EE213

Timetable

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