# ELEC 2011 SIGNALS AND SYSTEMS

**Credit Points** 10

**Legacy Code** 300057

**Coordinator** Upul Gunawardana (https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/)

**Description** This unit aims to develop students' understanding of continuous-time and discrete-time concepts and methods. It covers various signals and their analysis, as encountered in the fields of electrical, computer and telecommunication engineering.

**School** Eng, Design & Built Env

**Discipline** Communications Technologies

**Student Contribution Band** HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

**Level** Undergraduate Level 2 subject

**Pre-requisite(s)** MATH 1019 AND
ELEC 1003

**Equivalent Subjects** ELEC 2012 - Signals and Systems (WSTC AssocD)

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Explain common signal types and properties in electrical engineering
2. Explain continuous-time, discrete-time, linear and non-linear systems
3. Describe concepts of power, energy, power spectral density, energy spectral density of signals.
4. Determine impulse response, frequency response and stability of a system
5. Apply the principle of convolution to solve problems in linear systems
6. Perform Fourier analysis and Laplace analysis
7. Apply Z-transforms to discrete-time systems
8. Utilise MATLAB for solving signals and systems related problems

## Subject Content

Classification of signals
Time Domain Representations of Linear-Time Invariant Systems
The Fourier series
The Fourier Transform and Its Applications
The Laplace Transform
Discrete-Time Signals and Systems and Z-Transforms

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

| Item | Length | Percent | Threshold | Individual/ Group Task |
|---|---|---|---|---|
| Quiz | 40 mins x 3 | 30 | N | Individual |
| Practical | 3 hours x 6 | 20 | N | Individual |
| Final Exam | 2 hours closed book | 50 | N | Individual |

Teaching Periods

## Autumn

### Penrith (Kingswood)

#### Day

**Subject Contact** Upul Gunawardana (https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_22-AUT_KW_D#subjects)

### Parramatta - Victoria Rd

#### Day

**Subject Contact** Upul Gunawardana (https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_22-AUT_PS_D#subjects)

## Sydney City Campus - Term 2

### Sydney City

#### Day

**Subject Contact** Peter Lendrum (https://directory.westernsydney.edu.au/search/name/Peter Lendrum/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_22-SC2_SC_D#subjects)