

# ELEC 2011 SIGNALS AND SYSTEMS

**Credit Points** 10

**Legacy Code** 300057

**Coordinator** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

**Description** This subject 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 fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/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.

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

Teaching Periods

### Autumn (2024)

#### Penrith (Kingswood)

**On-site**

**Subject Contact** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2011\\_24-AUT\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_24-AUT_KW_1#subjects))

#### Parramatta City - Macquarie St

**On-site**

**Subject Contact** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2011\\_24-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_24-AUT_PC_1#subjects))

### Sydney City Campus - Term 2 (2024)

#### Sydney City

**On-site**

**Subject Contact** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2011\\_24-SC2\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2011_24-SC2_SC_1#subjects))

### Autumn (2025)

#### Penrith (Kingswood)

**On-site**

**Subject Contact** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC2011\\_25-AUT\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2011_25-AUT_KW_1#subjects))

#### Parramatta City - Macquarie St

**On-site**

**Subject Contact** Upul Gunawardana ([https://directory.westernsydney.edu.au/search/name/Upul Gunawardana/](https://directory.westernsydney.edu.au/search/name/Upul%20Gunawardana/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC2011\\_25-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2011_25-AUT_PC_1#subjects))

### Sydney City Campus - Term 1 (2025)

#### Sydney City

**On-site**

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC2011\\_25-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2011_25-SC1_SC_1#subjects))

## Sydney City Campus - Term 3 (2025)

### Sydney City

#### On-site

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC2011\\_25-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2011_25-SC3_SC_1#subjects))