

# ELEC 3001 COMMUNICATION SYSTEMS

**Credit Points** 10

**Legacy Code** 300007

**Coordinator** Khoa Le (<https://directory.westernsydney.edu.au/search/name/Khoa Le/>)

**Description** This subject will provide a basic introduction to communication systems and techniques. Specific topics covered include energy and power spectral density, amplitude modulation, frequency modulation, pulse modulation, an overview of digital modulation techniques, noise in communication systems and an overview of current telecommunication systems; spread spectrum systems, optical communication systems, radio broadcasting and mobile communication systems.

**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 3 subject

**Pre-requisite(s)** ELEC 2011

## Learning Outcomes

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

1. Analyse analogue modulation techniques such as amplitude and frequency modulation
2. Analyse pulse modulation techniques, quantisation methods, delta modulation, and pulse code modulation
3. Evaluate analogue communication systems performance in the presence of noise
4. Describe basic digital modulation techniques
5. Apply modulation and Fourier transform techniques to explain spread spectrum systems and other mobile communication systems

## Subject Content

Review of Fourier Series and Fourier Transforms

Continuous-wave modulation (AM, DSBSC, SSB, FM)

Pulse Modulation (PAM, PPM, PWM)

Delta Modulation

Digital Data Transmission

Introduction to Digital Modulation techniques

Introduction to spread spectrum communication systems

Mobile Communication System basics

## 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
Practical	6 x lab reports including lab preparation and lab documentation	30	Y	Individual	Y
Intra-session Exam	2 hrs, closed book	30	N	Individual	Y
Final Exam	2 hrs, closed book	40	Y	Individual	Y

Teaching Periods

## Autumn (2025)

### Penrith (Kingswood)

#### Hybrid

**Subject Contact** Khoa Le (<https://directory.westernsydney.edu.au/search/name/Khoa Le/>)

[View timetable](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-AUT_KW_3#subjects) ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC3001\\_25-AUT\\_KW\\_3#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-AUT_KW_3#subjects))

### Parramatta City - Macquarie St

#### Hybrid

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

#### Sydney City

#### On-site

**Subject Contact** Ehsan Gatavi (<https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/>)

[View timetable](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-SC1_SC_1#subjects) ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC3001\\_25-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-SC1_SC_1#subjects))

### Sydney City Campus - Term 3 (2025)

#### Sydney City

#### On-site

**Subject Contact** Ehsan Gatavi (<https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/>)

[View timetable](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-SC3_SC_1#subjects) ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ELEC3001\\_25-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC3001_25-SC3_SC_1#subjects))