

# ELEC 3001 COMMUNICATION SYSTEMS

**Credit Points** 10

**Legacy Code** 300007

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

**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/<br>Group Task |
|--------------------|-----------------------------------------------------------------|---------|-----------|---------------------------|
| Practical          | 6 x lab reports including lab preparation and lab documentation | 30      | Y         | Individual                |
| Intra-session Exam | 2 hrs, closed book                                              | 30      | N         | Individual                |
| Final Exam         | 2 hrs, closed book                                              | 40      | Y         | Individual                |

Teaching Periods

### Autumn (2024)

#### Penrith (Kingswood)

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC3001\\_24-AUT\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3001_24-AUT_KW_1#subjects))

#### Parramatta City - Macquarie St

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC3001\\_24-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3001_24-AUT_PC_1#subjects))

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

#### Sydney City

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC3001\\_24-SC2\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC3001_24-SC2_SC_1#subjects))