# ELEC 2006 ENGINEERING ELECTROMAGNETICS

**Credit Points** 10

**Legacy Code** 300481

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

**Description** This subject introduces Maxwell's equations in integral and differential form and their application to basic theory and application of electromagnetic structures, wave propagation, guides waves, antennas and Electromagnetic compatibility.

**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/) page.

**Level** Undergraduate Level 2 subject

**Pre-requisite(s)** MATH 1019 AND
ENGR 1011 OR
ENGR 1028

**Equivalent Subjects** ELEC 2003 - Electromagnetics LGYA 5725 - Electromagnetic Compatibility

**Assumed Knowledge**

The students should have a good understanding of 300021 - Electrical Fundamentals or equivalent.

## Learning Outcomes

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

1. Explain the work of a transmission line
2. Analyse the wave propagation along transmission lines and waveguides
3. Explain the concept of Maxwell's equations in static and dynamic cases
4. Analyse and solve problems of Maxwell's Equations
5. Analyse and solve problems of boundary conditions
6. Explain the basic concept of Hertazian dipole
7. Analyse basic antennas and calculate radtion resistance, gain, ground and mutual impedance

## Subject Content

Waves and Phasors
Transmission lines
Vector Analysis
Electrostatics
Magnetostatics
Maxwell's equations
Plane wave propagation
Wave reflection and transmission
Radiation and antenna
Introduction to electromagnetic compatibility
EMC requirement for electric and electronic systems

## 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 |
|---|---|---|---|---|---|
| Intra-session Exam | 1.5 hours | 25 | N | Individual | Y |
| Practical | 5 x 3 hours | 25 | N | Group/ Individual | Y |
| Final Exam | 2 hours | 50 | N | Individual | Y |

Teaching Periods

## Spring (2024)

### Penrith (Kingswood)

#### On-site

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

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2006_24-SPR_KW_1#subjects)

### Parramatta City - Macquarie St

#### On-site

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

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2006_24-SPR_PC_1#subjects)

## Sydney City Campus - Term 3 (2024)

### Sydney City

#### On-site

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

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2006_24-SC3_SC_1#subjects)

## Sydney City Campus - Term 2 (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=ELEC2006_25-SC2_SC_1#subjects)

## Spring (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=ELEC2006_25-SPR_KW_3#subjects)

## Parramatta City - Macquarie St

### 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=ELEC2006_25-SPR_PC_3#subjects)