

ELEC 2006 ENGINEERING ELECTROMAGNETICS

Credit Points 10

Legacy Code 300481

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

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 Hertzian dipole
7. Analyse basic antennas and calculate radiation 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

Sydney City Campus - Term 2 (2025)

Sydney City

On-site

Subject Contact Ehsan Gatavi ([https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/](https://directory.westernsydney.edu.au/search/name/Ehsan%20Gatavi/))

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

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2006_25-SPR_KW_3#subjects)

Parramatta City - Macquarie St

Hybrid

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View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC2006_25-SPR_PC_3#subjects)