

# ENGR 2023 ADVANCED ENGINEERING PHYSICS 2

**Credit Points** 10

**Legacy Code** 301351

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

**Description** This unit will be offered at Engineering Innovation Hub - Hassall St, Parramatta campus. The aim of the unit is to introduce students to topics such as electricity, magnetism, induction and semiconductivity, and to equip them with mathematical approaches for solving problems in these areas. Content in this unit will be delivered via the combination of lectures, tutorials and practicals in order to foster in students the growth of theoretical and applied physics knowledge. Students completing this unit will have a solid foundation upon which to base their continued engineering studies.

**School** Eng, Design & Built Env

**Discipline** Engineering and Related Technologies, Not Elsewhere Classified.

**Student Contribution Band** HECS Band 2 10cp

Check your HECS Band contribution amount 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)** ENGR 1047

**Co-requisite(s)** MATH 1035

## Learning Outcomes

1. Identify and explain the fundamental physical principles and laws relating to electricity, magnetism, physical optics, introductory quantum physics, and solid state physics.
2. Apply mathematical techniques to solve physics problems concerning electricity and magnetism, physical optics, and introductory quantum physics and solid state physics.
3. Execute experimental activities of a fundamental nature.
4. Competently report aims, method, analysis and findings on experimental activities.

## Subject Content

1. Electricity and Magnetism: Coulomb's Law, Electric Fields, Gauss's Law, Electric Potential, Capacitance, Magnetic Fields, Magnetic Field's due to currents, Induction and Inductance,
2. Physical Optics: Electromagnetic Waves, Interference, Diffraction
3. Introductory Quantum Physics and Solid State Physics: Photons, Electrons and Atoms, Photos and Matter Waves, Conduction and Electricity in Solids.

## 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.

Item	Length	Percent	Threshold	Individual/Group Task
Practical	1000 words (per report) 2 hours (practical exam)	20	N	Individual
Quiz	45 minutes (per Quiz)	30	N	Individual
Final Exam	2 hours	50	N	Individual

Prescribed Texts

Young, H & Freedman, R 2020, University Physics with Modern Physics, 15th edn, Pearson Education, UK

Teaching Periods

## Spring

**Parramatta City - Macquarie St**

**Day**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR2023\\_22-SPR\\_PC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR2023_22-SPR_PC_D#subjects))