

# RADI 5001 PHYSICS FOR DIAGNOSTIC ULTRASOUND

**Credit Points** 10

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

**Description** This subject introduces students to ultrasound physics, a key area of knowledge for sonographers. They will learn about the essential physical principles that underpin ultrasound imaging, extending from the basic principles of sound waves through to emerging technologies and applications. This subject provides an essential basis for future study in the Graduate Diploma in Sonography (Cardiac or Vascular).

**School** Medicine

**Discipline** Radiography

**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** Postgraduate Coursework Level 5 subject

**Assumed Knowledge**

Applicants for this program must have successfully completed an undergraduate degree in natural and physical sciences or health.

## Learning Outcomes

After successful completion of this subject, students will be able to:

1. Analyse ultrasound production, propagation and interaction with tissue.
2. Explain the Doppler effect and Doppler modes and how it is applied in professional practice.
3. Appraise components of equipment performance and limitations in diagnostic ultrasound.
4. Examine the cause and effect of ultrasound bio-effects and apply this knowledge to the safe use of ultrasound.
5. Identify ultrasound artifacts, their causes and propose solutions to address them.

## Subject Content

Ultrasound physics

- Introduction to ultrasound instrumentation
- Pulsed ultrasound
- Doppler principles
- Haemodynamic measurements

- Ultrasound instrumentation and equipment performance
- New ultrasound technologies and contrast agents
- Ultrasound artefacts
- Ultrasound bio-effects and safety

## 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
Quiz	45 minutes	30	N	Individual	N
Applied Project	Group: Images and Text / Individual: Verbal	35	N	Group/ Individual	Y
Final Exam	90 minutes	35	N	Individual	N

Prescribed Texts

Gill, R (2021). The Physics and Technology of Diagnostic Ultrasound: A Practitioners' Guide. 2nd Ed. Sydney, Australia: High Frequency Publishing

Teaching Periods

## Autumn (2025)

### Campbelltown

#### On-site

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=RADI5001\\_25-AUT\\_CA\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=RADI5001_25-AUT_CA_1#subjects))