

# ENGR 7024 ADVANCED BIOMEDICAL ELECTRONICS

**Credit Points** 10

**Legacy Code** 301209

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**Description** This subject will cover advanced design of biomedical electronic devices including, implanted devices, human-computer-interface, bioinstrumentation and neuromorphic engineering. Topics covered span from the bioelectromagnetism and related applications to regulatory aspects (IEC standards and TGA/FDA approval processes) and electrical safety of instrumentation. This subject will have a strong practical design focus with laboratories and tutorials focused on the design of real instrumentation (including manufacturing) dealing with real biomedical signals.

**School** Eng, Design & Built Env

**Discipline** Biomedical Engineering

**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 7 subject

## Restrictions

Students must be enrolled in a postgraduate program

## Assumed Knowledge

General principle of circuits analysis and simulation Electronic amplifiers Principle of Instrumentation and Measurements.

## Learning Outcomes

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

1. Apply medical diagnostic devices and biomedical technologies
2. Assess safety and risks of biomedical technologies
3. Apply fundamental principle of bio-electromagnetism to typical biomedical engineering problems
4. Design and test biopotential amplifiers in practical case studies
5. Design and test physiological sensors

## Subject Content

Principle of biomedical electronic and bio-electromagnetism  
Medical devices/diagnostics design principles  
Electrical safety applied to the field of biomedical engineering

## 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 |
|-------------------|-------------------------------------------------------------------------|---------|-----------|------------------------|-----------|
| Professional Task | Four submissions required, see the schedule of activities for due dates | 80      | N         | Individual             | Y         |
| Presentation      | 15 minutes                                                              | 20      | N         | Individual             | Y         |

### Prescribed Texts

- Webster, JG & Clark, JW (eds) 2010, Medical instrumentation : application and design, 4th edn, John Wiley & Sons, Hoboken, NJ.