ENGR 7024 ADVANCED BIOMEDICAL ELECTRONICS

Credit Points 10

Legacy Code 301209

Coordinator Titus Jayarathna (https://directory.westernsydney.edu.au/search/name/Titus Jayarathna/)

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/) 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
Professional Task	Four submissions required, see the schedule of activities for due dates	80	N	Individual
Presentation	15 minutes	20	N	Individual

Prescribed Texts

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