ENGR 3003 BIOMEDICAL ELECTRONICS

Credit Points 10

Legacy Code 301122

Coordinator Gaetano Gargiulo (https://directory.westernsydney.edu.au/search/name/Gaetano Gargiulo/)

Description This subject will cover recent advances in biomedical electronics including electronic diagnostic devices, implanted devices, human-computer-interface, bioinstrumentation and neuromorphic engineering. Topics covered span from the bio-electromagnetism 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 Undergraduate Level 3 subject

Pre-requisite(s) ELEC 2001 OR
ENGR 2001

Assumed Knowledge

Basic electronic (amplifiers and filters); computer skills.

Learning Outcomes

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

1. identify and describe 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.

Subject Content

1. Introduction to Bioelectronics - The cell and the volume conductor
2. Amplifiers and filters for biomedical signals
3. Interfaces with the 'volume conductor'
4. Electrical safety
5. Biomedical technologies

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
Practical	2 submissions required	30	N	Individual	Y
Applied Project	2 submission required	40	N	Individual	Y
Practical Exam	2 hours	30	N	Individual	Y