

University of Pretoria Yearbook 2020

Bioelectricity and electronics 732 (EBE 732)

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| Qualification | Postgraduate |
| Faculty | Faculty of Engineering, Built Environment and Information Technology |
| Module credits | 32.00 |
| Programmes | BEngHons Bioengineering BEngHons Electronic Engineering |
| Prerequisites | No prerequisites. |
| Contact time | 32 contact hours per semester |
| Language of tuition | Module is presented in English |
| Department | Electrical, Electronic and Computer Engineering |
| Period of presentation | Semester 1 |

Module content

This module focuses on electrophysiology, using a quantitative approach. Topics covered in the first part of the module are: electrical properties of the nerve cell membrane, action potentials and the Hodgkin-Huxley model, cable theory, the neuromuscular junction, and extracellular fields. The second part of the module builds on this background to discuss the theory and practice of electrical nerve stimulation. Applications of the theoretical work is discussed, including functional electrical stimulation (e.g. electrostimulation used for standing and walking in paraplegics), and cochlear implants for the deaf.

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