

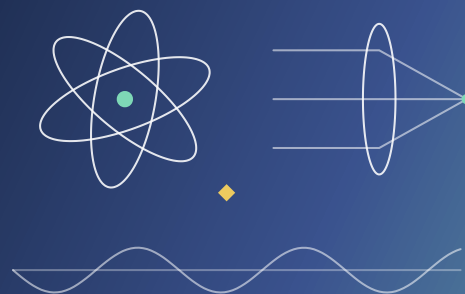
Module code

SPP-3407

Type of module

Undergraduate: Applied Physics – Elective

Physics in Medicine and Biology



Modular credits

4

Total student
engagement

56 hours

Prerequisite

**SPP-1203 Classical
Mechanics**

Anti-requisite

None

Aims

To provide knowledge of physics applied in medicine and biology.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse the forces acting on bones and tissues, including forces in stationary and moving fluids, laminar viscous flow, and blood circulation.

MLO 2

Analyse mechanisms of transport across membranes, medical uses of radiation, and the propagation of electrical impulses in nerves and cells.

MLO 3

Analyse and evaluate methods for the production and detection of medical radiation, including diagnostic radiography, angiography, mammography, and computed tomography.

MLO 4

Critically evaluate radiation doses, radioisotope applications, and the risks versus benefits of diagnostic and therapeutic tools such as CT, PET, MRI, ultrasound, and nuclear medicine.

MLO 5

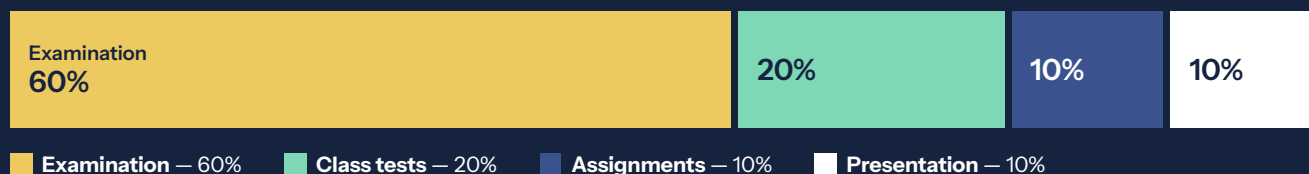
Analyse and synthesise experimental and diagnostic findings and present them in structured written and oral formats.

Module contents

Forces exerted on bones and tissues, forces in stationary and moving fluids	Laminar viscous flow and physics of blood flow	Transportation across membranes
Flow of water and solute through membrane	The artificial kidney, counter current transport	Impulses in nerves and cells
Electrostatics of a resting cell membrane, cable model of axon	Medical use of radiation	Production and detection of medical radiation, diagnostic radiography
Biological effects of ionising radiation	Nuclear medicine: radioisotopes for diagnostic purposes and medical treatment	Positron emission tomography. Gamma cameras, detectors, collimators
Resonance Imaging (MRI): magnetic moments, detection of signals, imaging techniques		

Assessment

60% **40%**
Examination Coursework



Formative assessment

Weekly discussion and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Class tests	20%
Assignments	10%
Group	10%
Presentation	10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1	PLO 1 (Core Disciplinary Knowledge)	2	PLO 2 (Critical Thinking and Comparative Analysis)
5	PLO 5 (Interdisciplinary Applications, Materials and Sustainability)	6	PLO 6 (Communication and Professionalism)

Sustainability concept addressed

3	SDG 3 Good Health and Well-Being
9	SDG 9 Industry, Innovation and Infrastructure
12	SDG 12 Responsible Consumption and Production

Digital skills/software used (not limited to)

■	Word processing software (e.g. Microsoft Word)
■	Presentation software (e.g. PowerPoint)
■	Web Browsers (e.g. Internet Explorer)
■	Learning Management Systems (e.g. Canvas)
■	Communication Software (e.g. Microsoft Teams)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

Office **ODVCE** Document date **23 June 2026** Status **New** Approval **GBF (12/02/2026)**