

<b>Module Title</b>	<b>Physics for Life</b>
<b>Level</b>	5
<b>Reference No.</b>	ASC_5_443
<b>Credit Value</b>	20
<b>Student Study Hours</b>	Contact hours: 50 Student-managed learning hours: 150
<b>Pre-requisite learning Co-requisites</b>	120 credit points at level 4 None
<b>Faculty/Department</b>	Applied Sciences
<b>Short Description</b>	This module will teach concepts and laws of physics that are fundamental for the understanding of human body systems. The module will also look at how these concepts and laws can be applied to develop medical technologies to examine and diagnose the function and disease of human body. Topics covered in this module include force, material, fluid, sound, electricity, optics, and radiation. The teaching of each topic will first be delivered through lectures to provide students with a firm understanding of the theory. Practical laboratory sessions will then be used to consolidate student's understanding of the theories, and also to develop student's ability and skill to apply these theories.
<b>Aims</b>	<ol style="list-style-type: none"> <li>1. To develop student's understanding of laws of physics that govern the function of human body</li> <li>2. To develop student's understanding on how laws of physics can be used to develop medical technologies to diagnose, monitor, and treat diseases</li> <li>3. To develop student's ability and skill on using laws of physics to analyse and explain the functioning of human body systems</li> <li>4. To develop student's laboratory practical skill on measuring and analysing physics phenomenons</li> </ol>
<b>Learning Outcomes</b>	<p>Students who successfully complete this module should be able to</p> <ol style="list-style-type: none"> <li>1. understand physical principles underlying human physiology.</li> <li>2. understand physical principles on which medical technologies are based.</li> <li>3. apply physical principles to analyse and explain the function of human body systems</li> <li>4. apply laboratory equipment to measure and analyse the function of human body systems</li> </ol>
<b>Employability skills</b>	This module will provide students with the foundation knowledge and basic skills that are required for a future career in clinical technology,

rehabilitation engineering, and medical engineering.

**Teaching and learning pattern**

The unit will be delivered by a mixture of lectures and laboratory practicals.

**Supporting**

one-to-one and group tutorials

**Tutorials**

**Indicative content**

The unit will consist of lectures and laboratory practical sessions including:

- force and motion
- materials and injury
- fluids and circulation
- sound
- electricity
- optics
- radiation

**Assessment**

Coursework (50%)

**Elements & weightings**

- Online quiz (20%)
- Lab report (30%)

Written exam (50%)

**Underpinning philosophy and the strategy for assessment**

The first three learning outcomes will mainly be assessed through online quiz and written exam. Online quiz will be given at the mid of the term to test the progress of student's learning, and also to provide feedback to students for the preparation of final written exam. The fourth learning outcome will mainly be assessed by lab report.

**Indicative Sources**

Davidovits P. (2008) **Physics in Biology and Medicine**. London: Academic Press.

Hamil J. & Knutzen K.M. (2009) **Biomechanical Basis of Human Movement**. London: Lippincott Williams & Wilkins

Enoka R.M. (2015) **Neuromechanics of Human Movement**. Champaign, IL: Human Kinetics

Dendy P.P. & Heaton B. (1999) **Physics for Diagnostic Radiology**. London: Taylor and Francis

Giancoli D.C. (2014) **Physics: Principles with Applications**. Pearson

Hewitt P.G. (2015) **Conceptual Physics**. Pearson