

19267-142(8) Physics for Health Sciences (2l, 1t)

2015

Course summary:

Structure of matter, kinematics, statics, dynamics, heat, temperature, wave motion and electricity.

Outcomes of course:

Emphasis is placed on mastering the physics concepts and how to use them to solve problems, rather than memorising recipes or formulas. The student should become familiar with the many principles in physics and learn their mathematical formulations. The student must be able to use these concepts to solve realistic problems and simultaneously develop the ability to work with physical quantities and their appropriate units.

Lecturer:

Dr PH Neethling
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Course content:

Splinting and Mechanics

Newton's Law, Static equilibrium, Vector analysis, Rotational inertia, Torque, Centre of gravity, Stability, Levers, Pressure

Mechanical energy, Work and Power

Work and Power, Kinetic and potential energy, Elasticity, Conservation of energy, Machines and efficiency

Momentum

Impulse and Momentum, Changes in Momentum, Conservation of Momentum, Collisions

Temperature and Heat

Heat, Specific heat capacity, Conduction, Convection and Radiation, Change of phase

Waves and Radiation

Properties of waves, Sound waves and ultrasound, Electromagnetic radiation, Effects of radiation on the body

Electro-stimulation

Charges and Coulomb's Law, Charge and discharge, Electrical field strength, Electrical potential, Capacitance, Electrical currents and circuits, Resistance and Ohm's Law

Practical (Tutorials):

Some of the lecture periods will be used for tutorials.

Study material:

The prescribed text book is a compilation from different text books and is available from the lecturer at about R150 (depending on student numbers).

Learning opportunities:

Interactive problem solving opportunities during lectures as well as regular tutorial sessions.

Assessment:

Methods of Assessments

Tutorial assignments will contribute 30 – 50 % of the class mark. One class test will be written during the semester and will contribute 50 - 70% to the class mark.

Venue and time of assessment opportunities

Class test:

Date: See timetable

Time: To be confirmed

Venue: Lecture hall Gamma (Room 2013), Merensky Building

Calculation of class mark:

Class mark = 30-50% (assignments) + 50-70% (class test)

Calculation of final mark for the module:

Final mark = 40% (class mark) + 60% (examination)

Admission to examination:

A class mark of at least 40% should be attained in order to qualify for the exam at the end of the year.