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

# 2016

## 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 develope the ability to work with physical quantities and their appropriate units.

## Lecturer:

**Dr PH Neethling**
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Office: Room 1042 in the Merensky Physics Building

## 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 circuts, 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 and homework 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.