

# 12998-114(16) Introductory Physics A (3l, 3p)

2014

## Course summary:

A calculus-based introductory systematic treatment of Newton mechanics that serves as the foundation for more advanced physics modules and eventual specialisation in physics. Experimental measurement and expression of physical quantities, kinematics, dynamics of translation, work and energy, rotational motion, statics, conservation laws, heat and thermodynamics.

*C Mathematics 114*

## Outcomes of course:

In order to lay the foundation for more advanced courses in physics and eventual specialization in physics, this calculus-based course serves as an introductory systematic treatment of Newton mechanics and thermodynamics.

## Lecturer:

Prof SM Wyngaardt  
Telephone number: (021) 808-3379 / 91  
E-mail address: shaunmw@sun.ac.za  
Office: Room 1018 in the Merensky Building.

## Course content:

### Formal lectures

Topics covered during the lectures include: Physical quantities, translational kinematics and dynamics, work and energy, mechanical conservation laws, heat and temperature, heat transfer, kinetic theory of gases.

### Laboratory work

The laboratory work consists of 3 experiments on topics related to the course material. Students work in pairs. Each student will be expected to record their his/her own data and provide a written report at the end of each of the experiments. These reports will be handed in at the end of each practical and accessed individually. At the end of the semester each student completes an individual examination on the laboratory work covered during the semester.

## Practical (Tutorials):

There are 6 tutorial sessions of 3 hours each. The tutorial sessions alternate with laboratory work. During the tutorial sessions students have the opportunity to solve problems related to the course work. At the end of each tutorial session, it can either be expected of students to write a test on the material covered in that particular session or hand in one of the tutorial problems for marking. These marks count towards the class mark.

## Study material:

Prescribed textbook: "**University Physics**"  
(Pearson/Addison-Wesley, 13th edition) by Young and Freedman.

## **Learning opportunities:**

1. Tutorials (6 tutorials of 3 hours each).
2. Lecture material available on SUNLearn.
3. Solutions to selected problems available on SUNLearn.
4. Tests and practice examples (with feedback) are available on SUNLearn.
5. Weekly tutorial sessions with lecturing assistant

## **Assessment:**

### ***Methods of Assessments***

Tutorial problems

Class test

Practical laboratory reports

Examination

### ***Venue and time of assessment opportunities***

Tutorial tests: during the last hour of a tutorial session

Class test: Click on the timetables link in the toolbar at the top of the page

Exam: Click on the timetables link in the toolbar at the top of the page

Supplementary exam: Click on the timetables link in the toolbar at the top of the page

### ***Calculation of class mark:***

Tutorial tests: 20%

Practical mark: 30%

Class test: 50%

### ***Calculation of final mark for the module:***

Examination mark: 60%

Class mark: 40%

### ***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.