

12998-144(16) Introductory Physics B (3l, 3p)

2015

Course summary:

An introductory physics module with a mathematical approach and emphasis on the fundamental concepts, with contents: Electrostatics, electrodynamics and magnetism. Special relativity.

P Physics 114

P Mathematics 114

C Mathematics 144

Outcomes of course:

This calculus-based course exposes the student to a first systematic treatment of electricity and magnetism. It also lays the foundation for more advanced physics courses which may lead to eventual specialization in physics.

Lecturer:

Dr GW Bosman

Telephone number: (021) 808 2525

E-mail address: gwb@sun.ac.za

Office: Room number 0054 in the Merensky Physics Building

Prof BIS van der Ventel

Telephone number: (021) 808 3388

E-mail address: bventel@sun.ac.za

Office: Room number 1019 in the Merensky Physics Building

Dr H Kriel

Telephone number: (021) 808 3658

E-mail address: hkriel@sun.ac.za

Office: Room number 1014 in the Merensky Physics Building

Course content:

Formal lectures

The following topics are covered during formal lectures: Electricity and magnetism: Electrostatics, electric fields and Gauss' law, potential, capacitance, currents and resistance, electrical circuits. Magnetic fields, force on moving charges in magnetic field, sources of magnetic fields. Brief introduction to electromagnetic induction and special relativity.

Practicals

The practical component of the course consists of three experiments related to the course material. Students work in pairs. Each student, however, has to record his/her results in a report on each experiment. This mark counts towards the class mark.

Practical (Tutorials):

Tutorials will occur each week. On days where practical laboratory work is also scheduled, the session will commence with a tutorial of one hour to be followed by the practical until 17:00. During tutorial

sessions in which there is no scheduled practical the tutorial shall end at 17:00. There will be 6 practical sessions for laboratory work. During the tutorial sessions students have the opportunity to solve problems related to the course work and to participate in other activities to enhance their understanding of the content covered during the lectures. During each tutorial session students should expect to produce work that will contribute to their class mark. The nature of assignments and assessments will be varied.

Study material:

Prescribed textbook: "**Sears and Zemansky's University Physics**"
(Addison-Wesley, 13th edition) by Young and Freedman.

Learning opportunities:

Tutorials (once a week).
Selected Lecture material will be made available on SUNLearn.
Solutions to selected problems will be made available on SUNLearn.
Practicals

Assessment:

Methods of Assessments

Tutorial problems, tutorial tests, homework assignments, group work, in-class quizzes
Class test
Practical laboratory reports
Examination

Venue and time of assessment opportunities

Tutorial tests: during the 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
Examinations: See timetable

Availability of marks:

Most marks will be available within two weeks after submission. The moderation processes for tests and exams may require more time.

Calculation of class mark:

Tutorials, homework, other assignments and practical report mark: 50% (laboratory work and the other assessments will be weighted roughly evenly)

Class test: 50%

Calculation of final mark:

Examination: 60%
Class mark: 40%

Admission to examination:

Class mark greater than or equal to 40%