59420 - 152 (6) Physics for Engineering students (2L, 1T)

2022

Course summary:

Introduction to basic relativity and basic quantum mechanics. Continued study of waves, acoustics and optics based on Engineering Physics 113.

Method of assessment: Flexible assessment

Prerequisite module: Engineering Physics 113

Language policy:

Afrikaans and English in the same class groups:
During each lecture, all information is conveyed at least in English. Summaries and/or explanation of the core concepts will also be given in Afrikaans. Questions in Afrikaans and English will, at the least be answered in the language of the question. Students will be supported in Afrikaans and English during a combination of appropriate facilitated learning opportunities.

Interpreting services from English to Afrikaans.

Module relevance in programme:

The module will introduce you to modern ideas in physics which is relevant to our understanding of the challenges which engineers face in today's modern world. These include the engineering of systems at ultrafast speeds, subatomic scales, and high radiation environments. The module builds on and complements the module in Engineering Physics 113

Outcomes of course:

This module will introduce you to the modern developments in physics, which is also relevant to the engineering environment.

Lecturer:

Prof S Wyngaardt
Telephone number: +2721 808 3379
E-mail address: shaunmw@sun.ac.za
Office: Room 1018 in the Merensky Physics Building

Course content:

Online video lectures will be loaded onto SUNLearn on a weekly basis. It is expected that students review the lectures as well as the accompanying prescribed reading every week. Lecture periods will be used as additional face-to-face consultation sessions to discuss problems, not for providing content. Students will be allocated to certain timeslots to ensure adherence to social distancing requirements. This will be communicated during the first week of classes. Topics

covered in the course includes special relativity, an introduction to the principles of quantum mechanics, basics introduction to nuclear and particle physics

Practical (Tutorials):

Tutorial practice questions will be provided together with the lecture material every week. Students can use these questions to practice and to test their understanding of the week's content. Students are required to complete an online tutorial test/quiz every Thursday during the tutorial period. These tests/quizzes will contribute towards the semester mark. The worst mark from these tutorials will be disregarded when calculating your semester mark, therefore no excuse needs to be made when you have missed one of these opportunities.

Study material:

Prescribed textbook: "Engineering Physics: Engineering Physics 113 and Engineering Physics 152" (Wiley Custom)

Learning opportunities:

Formal lectures, classroom discussions of relevant physics topics

Assessment:

Methods of Assessments
Tutorial 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: To be confirmed
Date: See timetable
Time: To be confirmed
Venue: To be confirmed

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.