

# PHYSICS



SCAN ME

## FACULTY OF SCIENCE

Physics is about fundamental understanding of the matter and interactions that we observe in nature, and relies on the language of mathematics for both development and communication. A major in Physics teaches you how to apply your

knowledge of fundamental principles in a range of contexts. Applications of the principles of physics are everywhere: transistors, computers, optical fibres, quantum computing. Physicists discovered the structure of DNA and the genetic code, and invented X-ray machines and the World Wide Web. Today physicists are looking at the fabrication of nano-scale smart materials and alternative energy sources. In mining, the biggest industry and employer in South Africa, much of the cutting-edge research and development in alternative methods of processing involves physicists.

The precipitous nature of technological development, now more than ever, requires applied physicists to bridge the gap between engineering and pure physics in order to meet the demands of the technological world. With a major in Physics you can also pursue postgraduate studies in other disciplines, such as engineering, where the application of fundamental physics is greatly valued.

### WHO WOULD BE INTERESTED IN THIS MAJOR?

If you are strong at mathematics and are interested in the ways in which nature can be understood, then physics might be for you. Learning how to solve problems computationally is also an important aspect of our undergraduate physics programme.

### WHAT COURSES WILL YOU TAKE?

The compulsory courses listed below must be included in your selection of courses for a major in Physics.

#### 1ST YEAR LEVEL COURSES

- Physics I: Matter & Interactions
- Mathematics I
- Applied Mathematics I

- Another course such as Astronomy I, Computer Science I or Statistics I

#### 2ND YEAR LEVEL COURSES

- Physics II: Intermediate Physics
- Mathematics II and/or Applied Mathematics II
- Another course such as Astrophysics II

#### 3RD YEAR LEVEL COURSES

- Physics III: Advanced Physics
- Another course such as Astrophysics III, Mathematics III or Applied Mathematics III

#### CAREER OPPORTUNITIES FOR GRADUATES

The BSc degree in Physics does not limit you to a career as a research physicist. Physics graduates develop a range of marketable skills such as intellectual rigour, technical and systems problem solving skills, mathematical abilities, computer literacy, experimental techniques, data analysis capabilities and the ability to communicate scientific ideas clearly. With a BSc degree in Physics you might find employment in industry: mining, construction, telecommunications, electronics; commerce: banks, computer divisions; school teaching; civil service.

With a postgraduate degree in Physics you might find employment in: industry (mining, electronics, telecommunications), parastatals (e.g. Eskom, Telkom, Spoornet), banking, information technology, medical physics, scientific civil service; national laboratories, technikons, universities, research careers in physics or cognate fields (geophysics, medical physics, atmospheric physics, engineering) or other disciplines (applied mathematics, astrophysics, computational physics, chemistry, education, etc.)

#### MINIMUM ADMISSION AND SUBJECT REQUIREMENTS

FPS of 550 (but admission only guaranteed at FPS above 660)  
Mathematics 70% & Physical Science 60%  
NBT in Mathematics, AL & QL to be written