



Bachelor of Science in Biotechnology Management

SAQA ID 120719 NQF Level 7

🕒 Qualification duration

Contact

Full-Time (Campus)

- Minimum: 3 years
- Maximum: 5 years

☰ Qualification description

The BSc (Biotechnology Management) degree prepares you for work in many areas of biotechnology and is an excellent foundation for careers in industrial and scientific research, agricultural biotechnology, quality assurance, food technology, technical sales and academia.

Our degree provides you with a solid theoretical and intensive practical foundation in fields like food and water microbiology, molecular biology, medical biotechnology, plant propagation and physiology, and agricultural, environmental and industrial biotechnology with an emphasis on application-based research, managing projects and using technology.

You will also cover subject areas such as Operations Management for Bioscience, Agricultural economics and Clinical Trials and good manufacturing practice.

We offer you an environment that combines theory, research and practical application. In addition, we have excellent facilities such as science labs and quality lecture rooms. We ensure that you graduate with essential work skills such as critical and analytical thinking, effective problem-solving, collaborating in teams and communicating effectively.

📄 Qualification accreditation

- Accredited by the Higher Education Quality Committee (HEQC) of the Council on Higher Education (CHE)
- Registered with the South African Qualifications Authority (SAQA)

**This qualification is offered
at the following campuses:**

- Midrand
- Pretoria
- Tyger Valley

✅ Entry requirements

- South African National Senior Certificate (NSC) with Bachelor's degree pass.*
- Or National Certificate (Vocational) Level 4 issued by the Council of General and Further Education and Training with a Bachelor's degree pass.
- Or letter or certificate confirming an exemption from Universities South Africa (USAf) for any other school-leaving results.
- Or completion of a Bachelor's degree.
- Or completion of the relevant Foundation Programme along with a letter or certificate of exemption from Universities South Africa (USAf).
- Or completion of a relevant Higher Certificate
- Or completion of the relevant Eduvos Access Programme

AND

- *Minimum of 32 Eduvos points (The points attained for the best two of the subjects of Biology/Life Sciences, Mathematics, Chemistry, Physics and Physical Science must be doubled)
- 50% or above for Grade 12 English
- 50% or above for Grade 12 Mathematics
- 50% or above for Grade 12 Life Science/Biology
- 50% or above for Grade 12 Physical Science.

📁 Possible career options

The careers for you, as a Bachelor of Science in Biotechnology Management graduate, are varied and include:

- Entrepreneurship
- Environmental, Agricultural and Waste Management
- Laboratory positions in the Food and Water, Medical and Industrial Biotech Industry
- Medical Lab Technician Laboratories
- Medical and Pharmaceutical Sales Representatives
- Quality assurance
- Postgraduate Studies
- Regulatory Affairs
- Research
- Scientific Communications



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Qualification structure

Year 1

Students are introduced to the basic principles of Biomedicine and Science.

- Animal and Plant Biology
- Applied Chemistry
- Bioentrepreneurship
- Computer Skills
- Introduction to Chemistry
- Laboratory Management
- Mathematics for Science Students
- Medical Bioethics and Communication
- Physics for Science Students
- Principles of Biology
- Quantitative Techniques (Biology)
- Science Skills

Year 2

Students will develop an intermediate level of knowledge in the following fields:

- Agricultural Economics
- Biopharmaceutical Sales and Marketing
- Ethnobotany
- Exploration of Industry
- Food and Water Microbiology
- Food Technology
- Introduction to Microbiology
- Introduction to Molecular Biology
- Medical Microbiology and Immunology
- Plant Physiology
- Plant Propagation

Year 3

On completion of this level, the students will have acquired a rounded knowledge in the following fields:

- Agricultural Biotechnology
- Analytical Chemistry
- Clinical Trials and Good Manufacturing Practice
- Criminalistics
- Industrial and Environmental Biotechnology
- Medical Biotechnology
- Operations Management for Bioscience
- Protein Biochemistry and Proteomics



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Module descriptors

Year 1

Animal and Plant Biology

This module aims to introduce biological diversity, focusing on the evolution, classification, anatomy, physiology and ecology of the major phyla of the animal and plant kingdom.

Applied Chemistry

This module aims to impart you with the ability to become an active participant in the learning process using several logical reasoning frameworks, thereby stimulating critical reflection on fundamental ethical issues that relates to the study of biotechnology. Furthermore, it intends to enhance ethical knowledge, ethical sensitivity and ethical judgement based on a balanced overview of scientific perspectives and social consciousness.

Bioentrepreneurship

The aim of this module is to introduce science students to the basics of business and equip the students with an understanding of the world of business.

Computer Skills

The aim of this module is to provide practical use of computer applications to create, manage and format data by developing word-processing, spreadsheet and presentation skills in a Windows Operating System (OS) environment.

Introduction to Chemistry

This module aims to develop students' understanding of the basic/fundamental chemical principles and techniques within general chemistry and to develop practical and laboratory skills. The student should be able to apply these concepts to practical problems. This module will also serve as the basis for students' further development in the physical and biological sciences.

Laboratory Management

This module focuses on laboratory safety, the quality of the product/service delivery (to the internal and external customer) and the quality of organisation (systems and processes) in the laboratory environment. The purpose of this module is to provide students with a complete body of knowledge of laboratory safety, health, environmental and quality (SHEQ) management as a holistic approach to applying good laboratory principles. Students will acquire fundamental theoretical and practical knowledge regarding the principles of SHEQ, applying SHEQ and quality assurance principles and procedures, laboratory hazard identification and risk assessment, system documentation tools as well as good laboratory practices.

Mathematics for Science Students

This module aims to introduce mathematical techniques and prepare students to use mathematics confidently to solve problems, communicate and reason mathematically and make connections between mathematics and its applications in real world scenarios.

Medical Bioethics and Communication

This module aims to provide you with a description of the communication process. Thus, aiding in the identification and definition of components and fundamental approaches to interpersonal, public and organisational communications, in particular, relating to how you make yourself understood in interactions within the scientific context.

Physics for Science Students

This module aims to give an overview over the breadth of physics and instil an understanding while providing examples of the application of physics in science.

Principles of Biology

This module aims to introduce the cell as the elemental structural and functional unit of all living organisms.

Quantitative Techniques (Biology)

This module aims to introduce statistical techniques and experimental design as applied to biological problems. The emphasis is placed on the selection and interpretation of tests, descriptive methods, tests of significance, linear regression, correlation and analysis of variance.



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Module descriptors

Year 1

Science Skills

This module aims to develop a set of intellectual skills that are associated with processing information in any branch of science. It includes basic and integrated science skills that are necessary for applying the scientific method, an empirical method of acquiring reliable information about nature. This module also focuses on helping students appreciate other skills such as referencing and laboratory safety.



Bachelor of Science in Biotechnology Management

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Module descriptors

Year 2

Agricultural Economics

This module aims to deal with issues related to resource use in the production, processing, distribution and consumption of products originating in agriculture. Essentially, it deals with decision-making. It further provides the theoretical concepts of economics to deliver answers to the problems of agriculture and agribusiness. Furthermore, it plays a pivotal role in understanding the complication involved in the foundation system.

Biopharmaceutical Sales and Marketing

This module aims to provide the student with an understanding of how marketing influences segments of the healthcare environment.

Ethnobotany

This module aims to study the dynamic relationship that exists between humans and plants. It highlights the importance of plants in providing medicine, health, industrial material and nutrition.

Exploration of Industry

This module aims to expose BSc Biotechnology Management and BSc Biomedicine students to the research component of these two degrees and to industrial site visits to have a better understanding of what the industry has to offer. In addition, the benefits of such exposure will extend to the student's career path and assist them to explore possible entry-level positions.

Food and Water Microbiology

This module aims to familiarise the student with the microbiology associated with food and water.

Food Technology

This module aims to introduce you to an understanding of the composition of food in a way that allows you to become cognisant of the link between the chemical, biological physical properties of food compounds and the interrelationship of these properties with aspects of nutrition, toxicology, safety, preservation, food manufacturing, and product design and development.

Introduction to Microbiology

This module aims to introduce students to the fundamentals of microbiology and the relationship between microorganisms and humans. After completion of this module, students should be able to collect, analyse, organise and effectively evaluate information as well as identify and solve problems using critical and creative thinking.

Introduction to Molecular Biology

This module aims to introduce you to the fundamentals of molecular biology and its applications.

Medical Microbiology and Immunology

This module aims to introduce students to the fundamentals of microbiology and the relationship between microorganisms and humans. After completion of this module, students should be able to collect, analyse, organise and effectively evaluate information as well as identify and solve problems using critical and creative thinking.

Plant Physiology

This module is concerned with the study of plant form and function. It will enable you to describe and explain the correlation between structure and function at the cell, tissue and whole plant level; and discuss and critically analyse the pattern of plant growth and development in response to endogenous and environmental cues.

Plant Propagation

The aim of this module is to provide students with an understanding of the principles and practices of propagating plants through various sexual, asexual and micropropagation techniques.



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Module descriptors

Year 3

Agricultural Biotechnology

The aim of this module is to introduce students to the understanding of the applications of the principles and benefits of agricultural biotechnology as a branch of science; with the primary objective of improving domestic plants and animals as well as microorganisms such as algae, the modifications of their bio-products, or the organisms for specific agricultural use. This module will also demonstrate how the management of sustainable exploitation of plants, animals and microbial resources can be achieved in an environmentally sustainable method.

Analytical Chemistry

Clinical Trials and Good Manufacturing Practice
This module aims to provide students with a description and critical assessment of the major issues and stages of developing and producing a biopharmaceutical. The assignment components of the module will equip the student with the tools to function as an effective team member in the design and conduct of ethically sound clinical trials and the quality-assurance process associated with product development.

Criminalistics

This module aims to expose students to the criminalistics approach to crime scene investigation as well as introduce students to different types of forensic sciences.

Industrial and Environmental Biotechnology

This module aims to provide you with knowledge about microbial species used in industrial processes and characteristics that give them potential interest to industry.

The module will essentially focus on the following salient objectives:

- Manipulation of microbial strains for industrial purposes – biochemical and genetics regulation, and methods of monitoring and regulating factors of microbial growth in batch, semi-batch and continuous culture systems.
- Theoretical basis about operating and control parameters of different types of industrial fermentation.
- Remediation methods used in the treatment of effluents generated during the industrial processes thereof.

Medical Biotechnology

This module aims to introduce students to the basic principles and applications of selected medical biotechnology fields and the profound effect that advances in these technologies is having on the health of modern-day society.

Operations Management for Bioscience

The Human Resource Management component of this module introduces the basic principles of operations management and the role of HR in the workplace. The Accounting component of this module introduces the basic principles of drawing up financial statements.

Protein Biochemistry and Proteomics

This module aims to enable you to develop a better understanding of the nature, structure, catalytic and kinetic properties of enzymes and their receptors.

Work Integrated Learning (Biology)

This module aims to assist students in identifying relevant industries for their Work Integrated Learning (WIL) experience through the preparation of proposals and approaching potential employers.