



UNIVERSITY OF
KWAZULU-NATAL™

INYUVESI
YAKWAZULU-NATALI

School of Life Sciences

College of Agriculture, Engineering
and Science

INSPIRING GREATNESS



DON'T ACCEPT WHAT IS,
ALWAYS ASK WHAT IF.

UKZN's School of Life Sciences, which is located on the Pietermaritzburg and Westville campuses, is one of five Schools in the College of Agriculture, Engineering and Science. The School has a staff complement of 144 academic and support staff; houses approximately 1600 undergraduate students; and boasts a postgraduate component of 514, engaged in Honours, Masters, PhD and Postdoctoral research. The School's cutting edge laboratories and research equipment compare favourably with the best in the world. Caring and enthusiastic lecturers ensure that students emerge highly employable, with a rich university experience and a first class degree in the Life Sciences to their name.

AREAS OF SPECIALISATION

This field of study encompasses all human, plant and animal life – ranging from microscopic germs to elephants and everything in between.

Areas of specialisation within UKZN's School of Life Sciences include:

- Biochemistry
- Biological Sciences
- Cellular Biology
- Ecology
- Genetics
- Industrial and Applied Biotechnology
- Marine Biology
- Microbiology



The School of Life Sciences includes the broader disciplines and majors in the following:

- **Biological Sciences**, which includes Botany, Cellular Biology, Ecology, Entomology, Environmental Biology, Grassland and Rangeland Science, Marine Biology and Zoology.
- **Biochemistry**, which looks at the molecules that make up 'life'. It studies the proteins, fats, carbohydrates, vitamins and DNA that make living cells and organisms work.
- **Genetics**, which explores the pathways that lead from the determinants of heredity, DNA, to the final expressed trait, such as hair colour. It seeks to understand the way in which the basic instructions for this process are encoded and expressed. Understanding the nature of genetic variation permits one to combat disease in humans, plants and animals, and improve existing strains and breeds of plants and animals.
- **Microbiology** is an exciting area of science in which students learn how to apply new and advanced technologies to explore the make-up, diversity and functioning of micro-organisms, as well as their relationship with other organisms and the environment.

DEGREES OFFERED

Undergraduate

- **Bachelor of Science**

UKZN's School of Life Sciences offers a three year undergraduate programme leading to the degree of Bachelor of Science (BSc).

This may be achieved in two ways:

- Through a general and flexible BSc (Life and Earth Sciences Stream) with possible major subject combinations of any two of the following: Biochemistry, Biology, Cellular Biology, Ecology, Genetics, Microbiology.
- Through a specific focused BSc, which has a more directed outcome:
 - Biological Sciences
 - Industrial and Applied Biotechnology
 - Marine Biology

Minimum entrance requirements:

- NSC degree pass with Maths, English, Life Orientation and Agricultural Science/ Physical Science/Life Science at level 4.
- Admission points required: 28-48 (highest scoring students taken first; BSc in Industrial and Applied Biotechnology requires a minimum point score of 30).
- The closing date for applications is 30 September.

Postgraduate

- **Bachelor of Science (Honours)**

A one- year specialist programme leading to the degree of Bachelor of Science (Honours). A minimum of 50% must be achieved at BSc level to gain admittance to Honours. The closing date for applications is 30 September, although late applications will be considered on payment of a late application fee.

- **Master of Science**

A Master of Science programme is offered, whereby students engage in research under the supervision of an academic staff member. A minimum of a BSc Honours degree or equivalent must be achieved to be considered for this programme. This degree takes a minimum of one year.

- **Doctor of Philosophy**

A Doctor of Philosophy programme is offered where students engage in novel research supervised by academic members of staff. This is typically three years of full-time study and normally follows on from a Master of Science Degree.

- **Postdoctoral study**

Remunerated, postdoctoral research positions are available on application. Visit <http://caes.ukzn.ac.za>

CAREER OPPORTUNITIES

A degree in one of the Life Sciences teaches one to observe, record, analyse and solve problems. To be a Life Scientist one needs an enquiring mind, good powers of observation, research skills, practical ability, the adaptability to learn new skills throughout one's career, and the social skills necessary to share one's ideas with colleagues. These skills make all graduates from UKZN's School of Life Sciences highly employable.

A biological or conservation major equips one for a wide range of careers in the natural sciences.

Biochemistry, Genetics and Microbiology are research-based subjects where students learn how to tackle research questions and find solutions. Graduates enjoy a wide choice of careers in medical, veterinary, agricultural, pharmaceutical or other related industries.

Broad Career Categories in the Life Sciences

- **Applied Research** activities by professional biologists are very broad and include fields like agriculture, aquaculture, horticulture, marine ecology, nature conservation, commercial forestry and many others. Several research institutes, national



and provincial state departments and private organisations employ biological scientists in South Africa.

- **Management**

As an alternative or adjunct to active research, scientists who are specialised in particular disciplines or research fields may choose careers in management.

- **Extension**

Biologists who have specialised in more applied aspects (e.g. entomology, grassland science) may be employed by organisations that provide professional advice to farmers and other agriculturalists on overcoming problems.

- **Environmental/wildlife consultancy**

Several private companies that specialise in environmental services (e.g. environmental-impact assessments, compilation of wildlife documentaries) employ a variety of biological scientists depending on their focus. Alternatively, many biologists become self-employed and offer similar consulting services in their private capacities.

- **Forensic investigations**

Scientific evidence is often used to resolve legal issues ranging from murder trials to environmental pollution. Depending on their speciality, biologists

often contribute to such investigations whether sanctioned by the State (e.g. South African Police Services) or by private institutions (e.g. Umgeni Water).

- **Industry**

Molecular biologists in particular are employed by biotechnology and other product-orientated companies (e.g. Unilever, Reckitt Benckiser), for a variety of services ranging from quality control to new product development.

- **Education and Training**

Biological scientists may opt for teaching careers at schools, universities, natural-history museums (e.g. KwaZulu-Natal Museum) or environmental-education centres (e.g. WESSA).

- **Biochemist**

Biochemists work on diseases like malaria, diabetes and cancer and explore stem cells to cure diseases. They develop vaccines, new diagnostics and search for and design new drugs. They work in veterinary medicine and design forensic tests ('crime scene' investigations). Surveys show that our graduates are very successful in following their passion for research, teaching or in establishing their own enterprises.

- **Geneticist**

Geneticists work with the genetics of plants, humans and animals to improve strains and breeds of plants and animals. They work to conserve species, understand diseases and our environment. Geneticists work in private and government laboratories and research institutions.

- **Microbiologist**

Microbiologists work in diagnostics, food, beverages, water and waste management. They improve the quality of beer and find bacteria to protect our environment. They are employed by industry, research institutions, diagnostic and quality control laboratories, governmental agencies, and water and waste water authorities.

CONTACT DETAILS

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Handbook:

For full course codes and information see the College of Agriculture, Engineering and Science handbook at <http://caes.ukzn.ac.za>

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