Statistics and Data science Education at UNISA

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UNISA | college of science, engineering and technology | 150 YEARS

Define tomorrow.

Outline

- Background
- Innovative in teaching and learning
- Qualifications
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- Teaching and learning methods
  - ❖ Learning material
- Research
- Department of Statistics
  - MSc in Biostatistics
  - Data Science
  - Centre for Augmented Intelligence and Data Science Research Unit (CAIDS)

Background

- The University of South Africa (UNISA) is a comprehensive open and distance e-learning (ODeL) Institution.

What we do

- The core business areas of Unisa are teaching, research and engaged scholarship.

Innovative in teaching and learning

- As a comprehensive university, Unisa offers both vocational and academic programmes at the level of

  ❖ undergraduate and postgraduate certificates and diplomas to degrees, and

  ❖ postgraduate diplomas, master's and doctoral qualifications.

  ❖ Unisa also offers short learning programmes targeting the specific needs of industry and civil society.

Qualifications

- Unisa has a rich tapestry of study disciplines that include the humanities, business and management, law and criminal justice, agriculture and environmental sciences, and science, engineering, and technology.

- Courtesy of its comprehensive nature, Unisa offers an unparalleled range of study choices, ranging from short courses and certificate programmes to three-and four-year degrees and diplomas, master's and doctoral qualifications

UNISA PRINCIPLES

- UNISA usually starts the teaching process with the development of the curriculum long before the students register.

  ❖ This will enable better pre-registration decision-making for students as well as the development of more coherent programmes by academics.

- The curriculum development process is conducted by a team involving academics, curriculum and course designers, student support specialists, student counsellors, language specialists, tutors, relevant external stakeholders, and, where possible, representatives of current and past students.

Teaching and learning methods

- The ODeL teaching and learning methods for a particular programme or course
    - ❖ determined by the nature of the programme, the profile of the students, students' access to resources, and the HEQF level of the programme.

    - ❖ include independent study of learning materials, completion of various activities, formative assessment tasks, tutorials, practical work and opportunities to interact with others as well as research activities.

    - ❖ include work-integrated learning as a planned component of a curriculum when outcomes can only be achieved through work-based experience.

Learning material

- Systematically designed as outlined in the Tuition Policy and Framework for a Team Approach to Curriculum and Learning Development,

  ❖accessible to target students,

  ❖requires the active engagement of the student,

  ❖build on the students' experience and knowledge, enabling the student to construct new knowledge.

Research

Mission

- To foster a thriving research culture that empowers the academic community to address complex global challenges and contribute meaningfully to knowledge creation.

- Through strategic initiatives, professional development programs, and collaborative opportunities, Unisa aims to equip our researchers with the tools and expertise they need to excel.

Research

Unisa has identified ***ten catalytic niche areas*** that have the potential to significantly

❖enhance its academic agenda,

❖transform the global academic landscape, and

❖address societal needs.

https://www.unisa.ac.za/sites/corporate/default/Give-to-Unisa/Projects/Unisas-ten-catalytic-niche-areas

• These focus areas are designed to drive innovation and positive change both locally and globally.

Department of Statistics

- Unisa has nine colleges, Accounting Sciences, Agriculture and Environmental Sciences, Economic and Management Sciences, Education, Human Sciences, Graduate Studies, Graduate School of Business Leadership and College of Science, Engineering and Technology.

- Department of Statistics is under the College of Science, Engineering and Technology within the School of Science.

Programmes in the Department of Statistics

- The Department of Statistics offers a wide range of undergraduate and postgraduate programmes, from
  - ❖ a Higher Certificate in Statistics to BSc degrees,
  - ❖ BSc honours degrees,
  - ❖ an MSc, and Doctoral studies in Statistics.

- As Unisa is a leading CODeL learning institution that admits students globally, the lecturers have an integrated online teaching approach to reach all students.

Department of Statistics:

- To comply with the latest trends, we constantly review our modules and programmes. Two new programmes will be introduced:

    ❖Postgraduate Diploma in Data Science (in 2026)

    ❖MSc in Biostatistics (in 2026)

- These will enhance our computational curriculum, which will be relevant to the new academic demands.

Department of Statistics: How do we teach a module?

- After the registration, students have access to the module websites, which provide detailed information about the modules:

https://mymodules.dtls.unisa.ac.za/course/view.php?id=79813

https://mylifeunisaac-my.sharepoint.com/personal/debuslk_unisa_ac_za/Documents/2025%20Academic%20year%20FOLDER/Conferences/SUSAN%202025/STA4813_2025_TI_101_0_B.pdf

https://mylifeunisaac-my.sharepoint.com/personal/debuslk_unisa_ac_za/Documents/2025%20Academic%20year%20FOLDER/Conferences/SUSAN%202025/Study%20Guide%20for%20STA4813.pdf

Department of Statistics: How do we teach a module?

- The website is also used to interact with students on a regular basis through the "Discussion Forum" section.

- Conduct virtual discussion and tutorial classes using MS Teams.

Department of Statistics: Research

- As leaders in distance education, the range and depth of our programmes ensure a coherent degree structure which brings statistical knowledge and technology skills to students from all walks of life - in the South African market and beyond.

Department of Statistics: Research

- Research within the department is mainly in mathematical statistics with the aim of maintaining a balance between the development of theory and applications of that theory.
  - ❖ Extreme value theory
  - ❖ Quantile regression
  - ❖ Spatial and Spatiotemporal models
  - ❖ Data science / machine learning
  - ❖ etc.

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