



College of Agriculture, Engineering and Science | Annual Report 2020



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Despite the constraints of the COVID-19 pandemic, the College of Agriculture, Engineering and Science (CAES) contributed significantly in 2020 towards UKZN's goal of being the Premier University of African Scholarship and also met its strategic imperative of excellence in teaching and learning, research, community engagement and targeted internationalisation.

College Strategic Objectives

In line with UKZN's strategic plan, the College set out to achieve three objectives in 2020, namely (i) efficient management in order to enhance a reciprocal delivery of both academic and administration services; (ii) improvement of standards for student enrolment, learning space and throughput of graduates and publications; and (iii) improvement of third stream income generation through long-term sustainable partnerships and collaborations.

Significant Achievements

The COVID-19 pandemic catapulted the College into moving all lectures online and using a blended approach to teaching and learning. Academic and support staff rose to the challenge and worked incredibly hard to get online lectures, tutorials and innovative support activities – coupled with physical practicals – up and running within a very short timeframe. College and School leadership were visible and accessible.

In 2020 the College – which had an overall student enrolment figure of 9 438 – graduated a total of 1 944 students. Of these, 138 received doctoral degrees, 285 were awarded masters degrees, 287 honours degrees, 1 185 bachelor's degrees, and 49 got postgraduate diplomas.

In affirmation of the quality and standard of UKZN's Engineering degrees, all Engineering programmes were fully accredited by the Engineering Council of South Africa for a further five-year cycle.

The new suite of Data Science undergraduate and postgraduate degrees and diplomas within the School of Mathematics, Statistics and Computer Science attracted significant interest and uptake through targeted marketing and owing to deliberate linkage with industry employers and workplace priorities.

In the research sphere, the Higher Degrees Management System (HDMS) for student applications was implemented, with a positive impact on efficiency and throughput. All students exceeding the maximum duration for their degree were asked to apply for readmission, forcing them to engage with their supervisors and put down timelines for degree completion.

The strategy of incentivising research outputs led to a higher rate and quality of publications and the College continued to have the largest number of researchers in the top 30 list with respect to research productivity units at UKZN. Eight of the top ten spots for 2019 were occupied by CAES academics, with Professor Freddie Inambao



(mechanical engineering) emerging as the top performing researcher at UKZN and his colleague Professor Viranjay Srivastava (electronic engineering) earning the top position in the young researcher category.

The Institute for the Development and Dissemination of African Science (IDDAS) has produced new research clusters within Schools, which collaborate across disciplines, within the College and with other Colleges of UKZN. Research and industry partnerships have increased, as have strategic linkages and collaborations with national and international partners, and successful grants applications. A number of local and international MOUs have been signed.

With physical events prohibited owing to COVID-19, the College swiftly moved its marketing and outreach activities into the virtual space, with the advantage of a broader reach now possible. Particularly successful events held during lockdown included the Science Centre's online workshop series for children, the College's annual Wonder Women in Science campaign and its Online Open Day, which reached some 10 000 potential applicants via social media channels. Academic online symposia proved equally successful and far-reaching, with the CAES Postgraduate Research and Innovation Symposium (PRIS) attracting 900 participants, and the virtual launch and rebranding of the renowned Pollution Research Group as the Water, Sanitation and Hygiene Research and Development Centre (WASH R&D Centre) attracting collaborators from all around the world.

In a unique exercise, the College contributed to the fight against Covid-19 through the manufacture of Personal Protective Equipment (PPEs), including hand sanitizers and the manufacture of face shields for vulnerable staff.

Significant Challenges Encountered and Action Taken to Address Them

The start of the 2020 academic year was disrupted by student protests, followed closely by the onset of the COVID-19 pandemic. These twin factors put a severe strain on the University's core business of academic service delivery.

COVID-19 changed the face of teaching and learning within the College dramatically as everything moved online. Initially, online teaching proved a major challenge as many staff had little experience of this kind of teaching. Training provided by the University and multiple new tools such as Zoom, Kaltura and mStems assisted in meeting this challenge to a significant extent. Academic staff were exposed to the principles relevant to the theory and practice of blended learning and in 2021, the College plans to establish a balanced blended learning approach where the integrity of assessment will match the quality of tuition given to students. The progress and throughput of students will benefit from this new initiative related to teaching and learning.

Reduced access to laboratories and workshops delayed some projects for postgraduate programmes, pushing them into the 2021 academic year. This continues to be a serious challenge. In a brave first for UKZN, the College sourced online practical software for use in multiple disciplines and rolled this out effectively to allow for safer and reduced numbers in laboratories.

Multiple workshops on emotional well-being and home/work life balance were facilitated in an effort to help staff cope better with the very real stresses of COVID-19.

Delays/deferment in academic and professional staff recruitment processes coupled with over enrolment continued to be a challenge and to put pressure on the finite resources available on both the teaching and research front.



Budget constraints within the College meant that some critical upgrade projects for aged and inadequate teaching and research equipment could not be executed. This was exacerbated when electricity load shedding led to equipment damage and expensive repairs.

Plans to Ensure the Future Financial Sustainability and Efficiency of the College

In line with Project Renewal CAES will focus on performance review of service provision, and increased efficiency and flexibility that optimises value for money. The College plans to develop a structure that promotes transparency and fairness in the work environment, improves communication across all levels and promotes team work, continued training and mentorship of staff. Blended online teaching and learning will be integrated into the core business of the College to improve student retention, throughput and graduation rates while minimising average completion times. Established initiatives for third stream income generation will be enhanced through strategic industrial partnership, inter-and-cross-disciplinary research teams and increased research grantsmanship. By leveraging existing UKZN financial resources directed for investment in the College, a positive return for the benefit of both the College and UKZN will be exhibited.

Recognition and Gratitude

2020 will be remembered as a year like none other; history books will be written highlighting the virtues of those who dedicated their lives for the benefit of humanity during this trying time, some to their very last breath.

On behalf of the College Management Committee, I commend all staff for bringing a positive attitude to work every day. Staff have worked extra hours – sometimes under very difficult circumstances – in their commitment to service delivery. Away from the comfort of the office and the classroom, staff have been compelled to be innovative in the way they teach, do research and provide administrative and technical support. The College has succeeded together as a team of colleagues and continues to contribute positively to the success of the University. Such great performance would not be realised without the support of our stakeholders, including funders, external partners and collaborators.

I thank all staff for being my inspiration during this most difficult of years. The future belongs to the brave. Our hopes and dreams will continue.

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