



College of Agriculture, Engineering and Science | Annual Report 2012

by Professor Deo Jaganyi



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2012 was a challenging yet exciting year of consolidation and considerable achievement for the College of Agriculture, Engineering and Science. The newly constituted five mega-Schools made big strides in entrenching the vision of the re-organisation. Their varied activities and accomplishments have ushered in new ways of advancing the College's contribution to the University's Vision and Mission.

Research

The College maintained its prolific research output and longstanding position as the undisputed leader in research production in the University. Its staff members were the recipients of a number of awards in recognition of their outstanding achievements. The College's contribution to University productivity units was 38%, with 21 academic staff appearing amongst the Top 30 UKZN Researchers for 2012.

Professor Johannes van Staden took the Top Published UKZN Researcher position and Professor Colleen Downs the Top Published Woman Researcher for another year. The prestigious Vice-Chancellor's Research Award was awarded to our animal science expert, Professor Michael Chimonyo.

In 2012 the College was awarded three South African Research Chairs (SARChI) in Rural Agronomy and Development, Land Use Planning and Management, and Intelligent Real-Time Power Systems. The total number of SARChI Chairs in the College is seven out of the 11 in the University. In addition, during the year the College partnered with ESKOM and the Sugar Milling Research Institute (SMRI) to establish two new Research Chairs, namely, the High Voltage Direct Current (HVDC) Engineering, and Sugarcane Biorefinery Chairs respectively.

To enhance its research competitiveness, the College invested in a number of strategic initiatives:

Recruitment of postdoctoral scholars: To increase its research output, quality and global impact, the College appointed 145 postdoctoral scholars across its five Schools at a cost of over R14 million.

Build high-end research capacity and critical mass of staffing: The College appointed four Research Professors – in Biological Mathematics (Epidemiology); Medical Microbiology; Artificial Intelligence; and Land Use and Management (Environmental Systems) – and eight Fractional Professors.

Develop the capacity in research and supervision of young, female and African academic staff: As part of transformation a total of 12 female academics were awarded "developmental sabbatical" through a teaching relief mechanism so as to concentrate on research for one year. This has been beneficial, with a number of the individuals producing publication articles and developing international linkages.

Teaching and Learning

Teaching and Learning in the College continues to take prominence. A number of internal curriculum reviews and harmonisation initiatives took place in 2012.



Five Academic Development Officers (ADOs) were appointed in the Schools to provide student support. Some 70 academics out of the 89 who don't have PhDs were registered for the qualification in 2012. This is in line with the philosophy of research-led teaching. Currently 75% of College academics have PhDs.

In 2012 the School of Life Sciences completed the implementation of a major in Genetics on the Westville campus, with the first set of students completing third year. An Honours programme in Genetics will run for the first time on the Westville campus in 2013.

The year also saw the end of the WOSA (Women in Science, Engineering and Agriculture) scholarship scheme that started in 2006 and was funded by the Carnegie Corporation, with 95 scholarships being awarded to 69 female students. To date 52 have graduated within the minimum period, with 34 of the students passing either cum laude or summa cum laude.

The College hosted four Graduation ceremonies and graduated 1 492 students out of a University total of 8 849. The College excelled in graduating the highest number of PhD students, increasing the number from 69 in 2011 to 77 in 2012. In terms of enrolment the College exceeded the total target of 8 500 by registering 8 921 students. It admitted 1 866 postgraduate students against a target figure of 1 906.

Awards and Achievements

In the year under review, the College celebrated individual and group achievements as well as receiving national and global recognition of a number of its students and staff.

- Professors Steve Johnson, Patricia Berjak and Rob Gous retained their NRF A-rated research status.
- At the 2012 Graduation ceremonies, Professor Bice Martincigh was honoured with a University Distinguished Teachers' Award for 2011; and Professors Gerald Ortmann and Peter Dankelmann were made Fellows of the University of KwaZulu-Natal.
- In recognition of their contribution to the advancement of science in South Africa, Professors Deresh Ramjugernath, Kesh Govinder and Nelson Ijumba were inducted into the Academy of Science of South Africa (ASSAf).
- South African Research Chair in Gravitating Systems, Professor Sunil Maharaj, was elected as the ASSAf Treasurer for the 2012-2016 cycle, and Emeritus Professor Patricia Berjak from the School of Life Sciences was elected as one of ASSAf's two VicePresidents for the same period.
- UKZN's African Centre for Crop Improvement (ACCI) won a Green Revolution for Africa (AGRA) award for outstanding contributions to food security in Africa. The award was presented to ACCI Director, Professor Mark Laing, by the Chairperson of AGRA, former Secretary General of the United Nations Mr Kofi Annan, at a banquet in Arusha, Tanzania.
- Renowned hydrologist and Emeritus Professor Roland Schulze was voted South Africa's top water researcher in a nation-wide survey. Colleagues who featured in the Top 25 list were Professors Graham Jewitt (8), Simon Lorentz (15), Jeffrey Smithers (21) and Dr Mark Dent (23).
- UKZN Mechanical Engineering's Apalis Solar Car entry in the Sasol Solar Car Challenge in September 2012 beat all other South African entries. The Apalis solar car was conceived as a final-year design project in the School of Engineering under the Solar Energy Research Group (SERG) led by two Mechanical Engineering Lecturers, Mr Clinton Bemont and Ms Kirsty Veale.



- UKZN's toilet design was placed sixth at the 2012 international Reinvent the Toilet Project funded by the Bill & Melinda Gates Foundation at the World Fair in Seattle in the United States. It was designed by Professor Chris Buckley and his team from the School of Engineering's Pollution Research Group.
- UKZN Mathematics was rated Number 1 in the country in terms of research impact over a 10-year period, based on an analysis by Thomson Reuters using their "InCites" research analysis tool. Professor Jacek Banasiak of the School of Mathematics, Statistics and Computer Science was awarded the South African Mathematics Society (SAMS) medal for Research Excellence.

Community Engagement and Outreach

Responsible community engagement that promotes science, engineering and technology has always featured prominently in the College's activities and 2012 was no exception.

The College ran a number of school outreach programmes aimed at learners. These included the School of Engineering's annual Winter School and "Be a Scientist for a Week". Some 300 students attended National Science Week at the Science and Technology Education Centre on the Westville campus.

Over 150 Agricultural alumni attended the launch of the Friends of UKZN Agriculture Society. The main objective of the society is to form closer working relationships between UKZN agriculture and agribusiness stakeholders.

Ithuba (isiZulu for hope or opportunity) is what the School of Mathematics, Statistics and Computer Science – in partnership with Statistics South Africa (Stats SA) and the Department of Education – is offering KwaZulu-Natal teachers through Maths4Stats. The programme, led by Professor Delia North, is a training initiative for mathematics educators, aimed at encouraging the development of mathematics education as an important bedrock for statistics.

Other notable activities in 2012 included the College's annual educational stands at the Royal Agricultural Show and at the Garden and Leisure Show in Pietermaritzburg, which both won Gold Medals as well as the Trophy for Special Endeavour.

Campus Development

In closing, the major infrastructure achievement for the College in 2012 was the opening of the new, multi-purpose, state-of-the-art and environmentally-friendly R30 million University of KwaZulu-Natal Intensive Tuition of Engineers (UNITE) and School of Engineering building.

This facility was opened by the then Minister of Science and Technology, the Honourable Mrs Naledi Pandor, on 2 March 2012. The building has rapidly become the heart and soul of Engineering at UKZN and the venue of choice for University, industry and community-related activities. Professor D Jaganyi Acting Deputy Vice-Chancellor and Head of College.

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