Research and Innovation@UNISA

2011

UNISA university of south africa

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The advent of democracy in South Africa heralded the sustained transformation of the higher education sector. The National Plan for Higher Education (NPHE) in South Africa (2001) not only set out a radical period of merging of higher education institutions, but also enrolment ratios for the various disciplines across the sector. The NPHE (2001) asserted:

> *The Ministry will over the next five to ten years shift the balance in enrolments between the humanities, business and commerce and science, engineering and technology from the current ratio of 49%: 26%: 25% to a ratio of 40%: 30%: 30% respectively.*

These ratios continue to shape our institutional admissions and foci, although the Green Paper for Post-School Education and Training has highlighted the subsequent decline in enrolments in the humanities. It is envisaged that specific measures, some of which are mentioned pertinently in the Green Paper, will be implemented to ensure that they, too, enjoy sustained growth and development. This is a most welcome development.

Post-1994, community engagement (CE) has also emerged as a key priority area alongside teaching, learning and research, although it remains quite disheartening that such a key element of socio-economic development remains unfunded. Nevertheless, most higher education institutions now include CE as a pillar of institutional endeavour and development.

Message from **the Principal and Vice-Chancellor**

Professor Mandla Makhanya

This brings us to what is probably one of the most critical and topical areas in higher education today, namely research. Research speaks to the heart of the academic and indeed, academia. The subjectivity of research choices reflects not only particular discipline-related interests, but perhaps more importantly, that which people are passionate about – that which reflects not only their life's work, but their intellectual capital. Research is as much a statement of a researcher's professional and intellectual competence as it is an expression of a personal interest and, as such, any attempt to focus or channel research, for whatever reason, is met quite understandably with dismay and even resistance. But it must be borne in mind that within the context of a developmental state, limited research funding and clear areas of critical shortages and skills, research should be more closely aligned to developmental needs than it has perhaps been in the past. While every effort should always be made to accommodate individual research interests, one would hope that these would be employed in such a manner that they make a tangible contribution to our development as a country and a society – particularly when considering that we are using public funds to fund most of our research.

Unisa's research niche areas, which are based on our strengths as an institution and the grand challenges identified by the Department of Science and Technology, are as follows:

- Knowledge generation and human capital development in response to the needs of South Africa and the African continent
- The promotion of democracy, human rights and responsible citizenship
- Innovation and capacity building in science and technology
- Economic and environmental sustainability
- Open distance learning

Our colleges have identified flagship research projects within these niche areas. Two such projects currently under way in the College of Economic and Management Sciences are Growth, Poverty and Policy Modelling, and Business and Climate Change. These flagship projects will address the impact of economic growth and its determinants on poverty reduction in developing countries, as well as carbon disclosure, green economies and green jobs and the impact of Copenhagen on Africa and South Africa.

At the University of South Africa, multi-, inter- and transdisciplinary (MIT) research is receiving concerted attention through the College of Graduate Studies, with the aim of creating openness to, and appreciation of its application and potential, especially within the context of open distance learning and eLearning, and Unisa's commitment to the growth and development of indigenous knowledge systems. One of our current projects that demonstrates excellence and coherence in a multidisciplinary framework is ecotoxicology, which is the study of the effects of chemicals on biological organisms or life systems. Ecotoxicology is a multidisciplinary

"Fundamental to our approach is an unrelenting commitment to excellence and support for our early career researchers, emerging research leaders and researchers from designated groups."

field which integrates concepts arising from disciplines such as toxicology, biology and molecular biology, analytical, inorganic and organic chemistry, physiology, ecology, genetics, microbiology, biochemistry, immunology, nanochemistry, environmental (soil, water and air) sciences, and economics. Research done in this project at Unisa can contribute to the development of new drugs for diseases like tuberculosis, cholera, meningitis, hepatitis, malaria, yellow fever, Ebola and others that are more prevalent in Africa.

As the University of South Africa we have also made a firm commitment to the growth and development of a dynamic body of researchers, especially young, black and female researchers. Significant progress has been made in that regard, much of which is detailed in this publication. This is a key strategic thrust for the university that is aimed not only at redressing past imbalances, but also ensuring the sustainability and flourishing of research at Unisa.

Dealing with all of these challenges while ensuring significantly increased and relevant research outputs is a challenging undertaking that will require drive, perseverance and patience. Above all it will require proactive, creative and innovative thinking. It was with this in mind that the Unisa Council agreed to the establishment of a new portfolio when we restructured the university shortly after I took up office in 2011. And so the portfolio of Research and Innovation was officially launched on 7 November 2011. The mission of the portfolio states succinctly:

> *The mission of the Research and Innovation Portfolio at Unisa is to advance the realisation of excellent research and innovative solutions that address important national and global questions, and contribute to the economic, social, cultural and environmental well-being of South Africa and the African continent. Through its research and innovation*

initiatives, Unisa strives to attain its vision of being the African university in the service of humanity. Unisa's geographical reach nationally and on the continent, as well as its high public visibility, provides significant opportunities to work alongside government researchers and the policy-makers who initiate and guide national research initiatives in government departments and science councils.

The Research and Innovation Portfolio at Unisa is focussed on strengthening the university as one of the leading providers of postgraduate programmes in Africa and a research institution where innovative thinkers can flourish and innovative ideas are rewarded. Driven by a desire to both explore new worlds and to apply new ideas to real-world problems, research at Unisa is not conducted only by academics and graduate students. Research opportunities are also fostered for professional and administrative staff, making research a truly university-wide enterprise.

Wherever possible, we want our research to be responsive to the needs of the communities we serve and ultimately to continue solving the challenges that society faces. We are making sure this happens by increasing our capacity to connect with non-governmental research organisations, industry, government, science councils and other research organisations. We are also breaking down the traditional barriers between fields of study, creating cross-disciplinary teams involving researchers from different disciplines.

Fundamental to our approach is an unrelenting commitment to excellence and support for our early career researchers, emerging research leaders and researchers from designated groups.

When we developed this portfolio it was no small task finding the right person to lead Research and Innovation in Unisa. It was imperative that we find not just the right candidate, but the perfect candidate. I am pleased to say that, ultimately, it was very easy to appoint Professor Mamokgethi Setati in the position of Vice-Principal: Research and Innovation. Not only are her research credentials impeccable, but she possesses a quality that, for the purposes of this portfolio, is vital. She has a passion to make a difference, a love for research that changes lives, and the determination, enthusiasm and energy to make it all happen. We are delighted to have her on board in this role and know that she will take research and innovation to new heights in Unisa. She also enjoys good support from Professor Les Labuschagne, Acting Executive Director: Research, Professor Greg Cuthbertson, Executive Dean: College of Graduate Studies and Professor George Subotzsky, Executive Director: Department of Information and Statistical Analysis.

The Research and Innovation Portfolio has shown its mettle in a very short time. Pivotal to its success and the achievement of its objectives is strategic investment by our Council in state-of-the-art research infrastructure and equipment as exemplified in the first phase of the Florida laboratories project at the Florida Campus. This will assist our staff in their research projects, and we trust that it will also contribute to making Unisa a more attractive proposition for high-calibre scholars.

There are many more projects under way and just as many in the offing. This overview will share many of those with you. I look forward with much excitement and anticipation to the successes that I know will be achieved by this fledgling portfolio under its dynamic leadership.

Prof. Mamokgethi Setati, Vice-Principal: Research and Innovation

Welcome to *Research and Innovation @ Unisa 2011*. In this publication we outline our research efforts, introduce you to several of our top researchers and highlight some of our research institutes, flagship projects and accomplishments. Research is the intellectual core that drives everything that we do at Unisa. It defines our role as a higher education institution, a strategic partner for industry and government and a member of the local and international community. Research naturally complements our primary teaching function and enables our community engagement work.

I am particularly thrilled to share this overview because 2011 was been distinguished by several key developments. We welcomed the new Research and Innovation Portfolio and said goodbye to Professor Rita Maré and Professor Tinyiko Maluleke, who respectively served as Vice-Principal: Academic and Research and Executive Director: Research. We are grateful to both of them for the work that they did in the last few years.

As the new team appointed to serve in the new portfolio, we took office with great enthusiasm. We successfully launched the Research and Innovation Portfolio, which is now home to the Department of Research, the College of Graduate Studies, the Department of Institutional Statistics and Analysis and the Department of Library Services. We also introduced the Directorate of Innovation and Technology Transfer. All these entities collectively support the university's goals in research, postgraduate studies and innovation by providing a coherent approach and an enabling environment for postgraduate students and all Unisa researchers.

Message from **the Vice-Principal: Research and Innovation**

Professor Mamokgethi Setati

We, for the first time, had our institutional Research Indaba in October 2011 to craft our research strategy and plan. This was followed by each of our colleges developing detailed plans to enhance the quality and impact of their research. These plans emphasise each college's commitment to stepping up its research activities and playing in a much higher league of international research. Our goal is to build a sustainable culture of research and research activity that does not just focus on producing outputs but also on developing excellence, innovation and leadership in research in Africa and internationally.

The unique nature of Unisa's service to humanity derives from a strong commitment to basic, strategic and applied research as well as innovation and commercialisation, in keeping with the university's identity both as a comprehensive institution and as a leader in certain niche research areas. The diverse nature of research at Unisa shows that our portfolio is balanced. While this may not be obvious from the summary data provided in this overview, Unisa's intellectual climate embraces and encourages multi-, inter- and transdisciplinarity – an approach that has fostered the development of many creative initiatives, some of which you will read about in this publication. This approach to research is perhaps our greatest strength, and the characteristic that most distinguishes Unisa from other universities.

The excellence of Unisa's research enterprise is built upon the excellence of our researchers. It is Unisa researchers who generate new knowledge, perform innovative research, attract, teach, and mentor exceptional postgraduate students, and engage in activities that benefit and enrich society. The distinction of Unisa's researchers is evidenced by National Research Foundation (NRF) ratings, membership of prestigious national academies and societies, prestigious national awards from preeminent organisations, grant and fellowship programmes, citations, and other recognitions and honours.

In 2011 our tally of NRF-rated scientists increased from 113 to 115. More significantly we also welcomed the announcement of Unisa's only A-rated scientist, Professor Alan Weinberg.

We have a dedicated Research Development Programme which provides staff the opportunity to develop the required research skills. In 2011, 1 259 Unisa staff members and postgraduate students attended research workshops and training sessions. This is significantly higher than the 965 who attended in 2010. Of importance is the profile of attendees. There has been a consistent increase in the number of African attendees over the last three years. In terms of gender, 86% of attendees were female. The majority of attendees also fell within the age group of 31 to 40. This is encouraging as it represents the next generation of researchers.

It is evident from the pages that follow that research is taking shape in all the Unisa colleges. The events of 2011 exemplify that. As we go forward, Unisa will continue to respond, exploring new opportunities to live up to our vision to serve humanity. We are committed to producing high-quality research that is socially responsive and meets the required standards of ethics and rigour. As we move forward we are grateful for the continued commitment and enthusiasm of Unisa researchers and are pleased with the opportunity to showcase their achievements in this publication.

Prof. Les Labuschagne, Acting Executive Director: Research

Unisa can attribute its illustrious history in part to immense foresight by its leaders and key decisions that from time to time have meant charting a new course for the institution. Indeed, 2011 heralded a new chapter for Unisa marked by the introduction of a dedicated strategy for research and innovation. With visionary leaders and a clear way forward for the next three years, we are experiencing exciting times of change and growth. We can expect to see Unisa emerge from this journey as a formidable hub of meaningful research output and achievement that is aligned with national imperatives.

The strategy is ambitious, and rests on a solid foundation consisting of leadership, support and people.

1) Leadership

Through careful selection of an executive leadership embodying both vision and passion, Unisa has shown its commitment to driving real change that will facilitate undertakings with the potential to increase the prosperity of our nation. The extent of Unisa's influence in Africa is considerable, so it is not unrealistic to believe that the positive impact of our leadership can extend beyond our borders.

Message from the Acting Executive Director: Research

Professor Les Labuschagne

2) Support

Over the years Unisa has developed a number of support programmes to create an enabling environment for research and innovation. Many of these continue to be relevant, but will undergo routine reevaluation to determine how they can be adapted or improved to better meet objectives. In addition, a series of new support programmes is being created. The maturity model thus striven for recognises the key stages of an academic career and incorporates suitable enabling mechanisms at each stage, and is intended to help researchers to map their personal progress across the continuum of development.

In the past, the architecture of support did not incorporate specific stages. We have now identified the initiatives that support researchers through each stage. Not only does this encourage individuals and grow their confidence, it also reflects the commitment of the institution to their success, and will serve to attract and retain research talent.

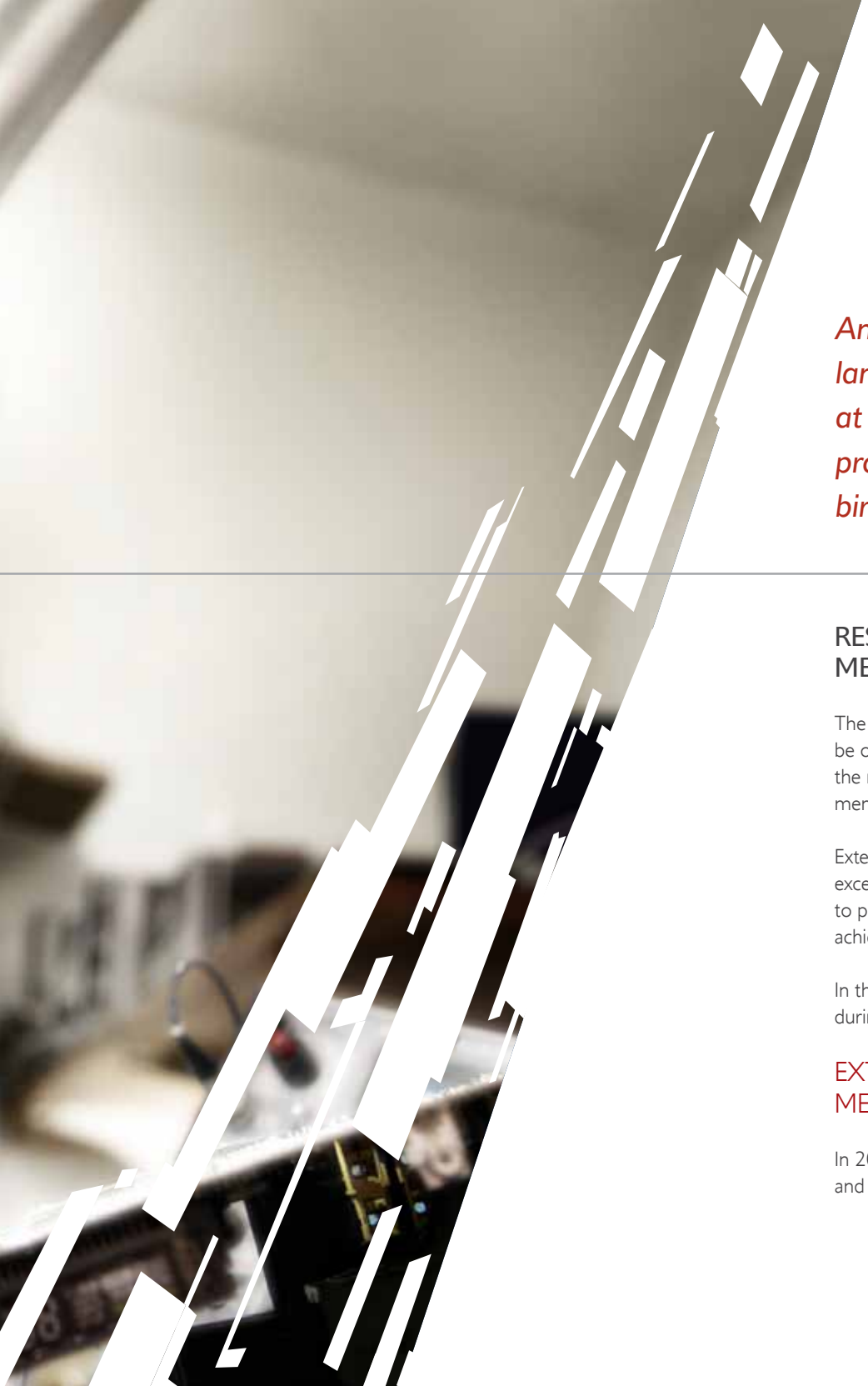
Two vital components of the enabling environment are the library and Unisa Press. Unisa is making a significant investment in these two resources, and developments in that regard are reported on extensively in this publication.

3) People

Without people, there would be no research. One of the most satisfying aspects of an overview such as this is the opportunity to acknowledge some of the commendable work being done and to tell the stories of people's research journeys. We are proud to give credit to the people who dedicate what often amounts to their life's work to identifying areas where new knowledge can change the world and set about uncovering, packaging and sharing that knowledge. Unisa already has a number of top researchers, as is evident from the awards bestowed on them both within and outside our institution. However, we must not lose sight of the fact that receiving an award is not the event of just a single moment, but is instead a reflection of constant and consistent effort over an extended period of time. In itself, an award can never constitute adequate recognition of a person's contribution to the world, which is sometimes evident only long after the award is made.

Unisa recognises the importance of developing the next generation of researchers who will contribute to achieving the transformation and changes required in South Africa if the country is to reach its full potential. In consequence, the five focus areas of the research and innovation strategy are not designed simply to sound politically correct while bearing no relation to what is truly required. This overview is a reflection of the diversity of activities under way to contribute to each focus area as Unisa operationalises its strategic intent.

Research dashboard



An accurate way of assessing the research landscape at any institution is to look at accolades, outputs and prominent programmes. In this section we provide a bird's-eye view of these aspects.

RESEARCH AWARDS AND NOTABLE MEMBERSHIPS

The importance of measuring the success of research efforts cannot be overemphasised. An important measure in this regard involves the recognition of achievements in the form of awards and notable memberships.

External awards and memberships serve to provide credible affirmation of excellence. Of equal importance, internal awards encourage researchers to provide quality output through the formal recognition of such achievements.

In this section we look at awards and membership highlights experienced during the year under review.

EXTERNAL RESEARCH AWARDS AND NOTABLE MEMBERSHIPS

In 2011 a number of Unisa researchers received prestigious awards from and gained membership of organisations and institutions outside the

university. These awards and memberships represent an independent and unbiased vote of confidence, and the peer recognition received in this way furthers the research programmes of individual researchers, adds to their scholarly credentials and contributes to the research profile of the university.

A proud and defining moment for Unisa: Prof. Setati displays her NSTF-BHP Billiton Award

TW Kambule Award

The National Science and Technology Forum (NSTF) gives recognition to outstanding contributions to science, engineering, technology and innovation at its annual NSTF-BHP Billiton awards ceremony. On 27 May 2011, Professor Mamokgethi Setati, Vice-Principal: Research and Innovation, received the National Research Foundation (NRF)-sponsored TW Kambule Award for the Most Outstanding Senior Black Female Researcher over the past Five to Ten Years, for her innovative and quality research on teaching and learning mathematics in multilingual classrooms.

Professor Setati holds a B2 rating from the NRF, independent affirmation of the fact that she enjoys considerable international recognition for the high quality and impact of her recent research outputs. And her research output has indeed been prodigious, especially considering that she heads the challenging Research and Innovation Portfolio while at the same time continuing with hands-on research.

"This award means a lot to me but more so for this university that I am so proud of," said Professor Setati. "It is important that Unisa researchers are recognised for being at the top of their game, not only within Unisa, but also out there where we are compared to other high-calibre researchers. Recognition such as this exemplifies what this university is all about." Professor Setati has already received two NSTF awards – the only professor at Unisa to have achieved this double accolade.

Prof. Mpfariseni Budeli

South African Young Academy of Science

It was a milestone event in the South African science and higher education sectors when the South African Young Academy of Science (SAYAS) was launched on 27 September 2011. It was also a pivotal moment for Unisa as Professor Mpfariseni Budeli (Associate Professor: Mercantile Law) was selected as one of the 20 founding members out of 150 nominations.

SAYAS, which was inaugurated by the Deputy Minister of Science and Technology, Mr Derek Hanekom, provides a national platform where leading young scholars from all disciplines in the country can interact, and also access international networking and career development opportunities. It is probably the highest gathering of South African young scientists as this is part of the Global Young Academy (GYA) and will collaborate with the established Academy of Science of South Africa (ASSAf) – a prestigious scientific institution.

Professor Budeli is part of a very elite group: membership of SAYAS is attained through the annual nominations of young scholars in all disciplines who are younger than 40 years, have a doctoral qualification and an extensive research track record.

Prof. Melodie Slabbert

Hugo de Groot Prize

The Hugo de Groot Society is responsible for, amongst others, publishing the leading *Journal of Contemporary Roman-Dutch Law*. Every year the society singles out one legal contribution to the journal to receive the Hugo De Groot Prize for the best overall legal publication. The award for 2011 went to Professor Melodie Slabbert (Jurisprudence).

Professor Slabbert's area of research relates to the legal aspects relevant to the application of biotechnology, which include, amongst others, legal aspects relating to stem cell research and stem cell therapy, genomic research, gene therapy and assisted reproductive technology. "The journal sets a very high academic standard and receiving this award is a huge honour," said Professor Slabbert. "Receiving this award has been a very enriching, inspiring and gratifying experience, and has motivated me to do more than ever before."

"The journal sets a very high academic standard and receiving this award is a huge honour." – Professor Slabbert

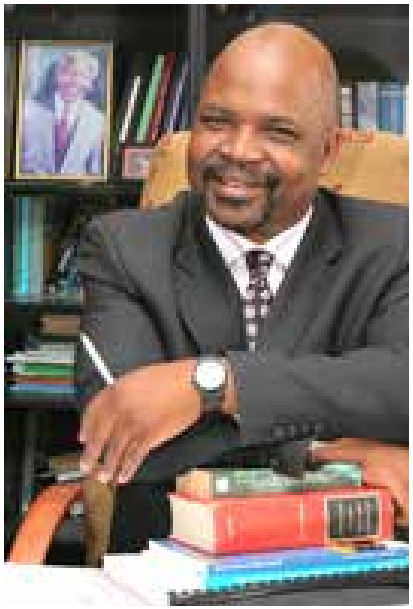
Stem cell research:
The legalities

Despite the opposition against stem cell research and use, there is no doubt that cell-based therapy has the potential to positively change the medical industry as we know it. However, stem cell research and use must be conducted in a properly regulated framework and controlled environment to ensure patient safety.

In addition to the above considerations, potential moral dilemmas to be addressed by legislation include the following:

- Should a person be allowed to reproduce in order to obtain stem cells from one embryo for the therapeutic treatment of other children or for research purposes to advance and develop new treatment?
- Should an embryo be afforded the same legal status as a born human being?
- Should embryos be created solely for research purposes?
- When may tissue be removed from a living body for purposes of stem cell research?

(Adapted from: Stem cell research – the regulatory framework in South Africa *by Sandra Sithole – South African Journal of Bioethics and Law, (4) 2, 2011)*



Prof. Tinyiko Maluleke

Academy of Science for South Africa

Professor Tinyiko Maluleke, Deputy Registrar, was awarded membership of the Academy of Science for South Africa (ASSAf), an independent statutory body of eminent South African scholars and scientists. He joined the following Unisa academics who have already been awarded membership of the prestigious organisation: Professors Narend Baijnath, Mamokgethi Setati and Catherine Odora-Hoppers.

The key objective of ASSAf is to promote and apply scientific thinking in the service of society. Among others, ASSAf attempts to remove barriers between people and obstacles to enable full development of researchers' optimal intellectual capacity; it inspires, promotes and recognises excellence in scientific and technical practice, and promotes science education and the culture of science.

Professor Maluleke's considerable international recognition from peers for the high quality and impact of his research outputs has resulted in a coveted B2 rating from the NRF. His research focuses on the intersection between politics and religion, and recent peer-reviewed publications have focused specifically on social cohesion issues such as social reconciliation, moral agency, patriarchy, gender violence, social ethics, social justice and public service. Other abiding research themes in his work include the social impact of religion on politics, (popular) culture and public life, with a specific focus on the African and African-American contexts. His research is characterised by an interest in the role of the intellectual in public life.

INTERNAL RESEARCH AWARDS

Cultivating a positive research and innovation environment takes time and also requires investment: both financial and in terms of human capital. Most South African universities lack an appropriate research-enabling environment due to the historical context of higher education in South Africa that includes, among others, inequity of the Bantu Education system and the fact that research engagements were previously the sole preserve of whites.

To address this, Unisa has prioritised the improvement of a research-enabling environment in its Research and Innovation Strategy. Research incentives and research awards and prizes, as highlighted in this section, make an important contribution towards cultivating a positive research environment at Unisa.

Principal's Award for Excellence in Research 2011

The Principal's Award for Excellence in Research is the second highest prize for research at Unisa following the Chancellor's Award for Excellence in Research. Both of these accolades are aimed at acknowledging research excellence and research performance. The Principal's Award for Excellence in Research is awarded every second year to alternate with the Chancellor's Award for Excellence in Research.

The Principal's Award for Excellence in Research is targeted at young and developing researchers not older than 35 years. This research cohort comprises scholars who are generally in the minority throughout the national higher education system at the moment. The prize is awarded

to young researchers or groups who have achieved academic research excellence of the highest quality as published in the preceding two years.

The awardees for 2011 are listed below.

Table 1: Winners of the Principal's Award for Excellence in Research 2011

Name	College
Prof. Ayo Afolabi	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)
Mr Chris de Wet	College of Human Sciences (School of Humanities, Department of Biblical and Ancient Studies)
Prof. Anel Ferreira-Snyman	College of Law (School of Law, Department of Jurisprudence)
Prof. Elmarie Kritzinger	College of Science, Engineering and Technology (School of Computing)
Prof. Inderasan Naidoo	College of Science, Engineering and Technology (School of Science, Department of Mathematical Sciences)
Prof. Kedibone Phago	College of Economic and Management Sciences (School of Management Sciences, Department of Public Administration and Management)
Mr Jacobus Vermeulen	College of Economic and Management Sciences (School of Economic Sciences, Department of Economics)

Awardee spotlight: Professor Elmarie Kritzinger

Prof. Elmarie Kritzinger

Professor Elmarie Kritzinger of the College of Science, Engineering and Technology's School of Computing was one of the recipients of the 2011 Principal's Award for Excellence in Research. The award recognised Professor Kritzinger's research on cyber security awareness and education amongst home users, with special focus on children. The results of this research have been published in a number of journals and conference proceedings, and a number of postgraduate students are currently conducting research within this focus area. This project has industry sponsorships as well as an inter-academic alliance, and also resulted in the establishment of the Cyber Security Awareness Community Engagement Project.

"Receiving the award was a great honour and privilege, since it shows that one's research is accepted not only amongst peers, but also within the wider academic community," said Professor Kritzinger. "This award gives value and recognition to many hours of hard work, commitment and perseverance."

Rev. Chris de Wet

Awardee spotlight: Rev. Chris de Wet, explorer of the past

Rev. Chris de Wet (New Testament and Early Christian Studies, College of Human Sciences) was one of the recipients of the Principal's Award for Excellence in Research. Rev. De Wet has submitted a doctoral thesis in the field of Ancient Greek. In his dissertation he investigates how slaves were regarded and treated in the later Roman Empire in the fourth century CE, especially in the context of early Christianity.

Rev. De Wet is passionate about the translation and critical reading of ancient Greek and Latin texts. He aims to conduct transdisciplinary research, not only to understand human behaviour and institutions in ancient times, but also to shed light on current knowledge – matrices, discourses and practices – that shape individuals and society.

Women in Research Awards

While South Africa's research and innovation productivity is generally low in comparison to other nations of similar economic size and scale, research productivity from women researchers in particular is even lower. According to the National Survey of Research and Experimental Development, the percentage of women researchers as a percentage of total researchers in the South African research and innovation sector has been between 38 and 38.3% from 2004 to 2010.

This under-representation of women researchers in the South African research and innovation sector has its roots in the discriminatory practices of apartheid. Women empowerment in all sectors of society has taken centre stage, including the empowerment of women researchers in the research and innovation sector and within the higher education sector in particular.

Unisa has put in place targets towards the empowerment of women researchers in its Research and Innovation Strategy. There are set targets for, among others, National Research Foundation (NRF)-rated women researchers and women researchers holding doctoral qualifications. The Women in Research Awards is yet another initiative aimed at acknowledging research and innovation excellence by Unisa's women researchers. The awards honour and celebrate the achievements of women in their respective fields of research and are awarded annually in four categories: Research leadership, Developing researcher, Resilience in research and Youngest doctoral graduate.

Women Research in Leadership Award

The Women Research in Leadership Award is awarded to researchers who, in the last five years, have demonstrated their outstanding leadership in research by publishing widely, contributing to the advancement of research within their field, participating in the development of scholars through mentorship, providing supervision to a substantial number of postgraduate students, receiving recognition and awards in their field as achievers and participating in community and/or industry engagement.

The awardees for 2011 are listed below.

Table 2: Winners of the Women Research in Leadership Award 2011

Name	College
Prof. Marie de Beer	College of Economic and Management Sciences (School of Management Sciences, Department of Industrial and Organisational Psychology)
Prof. Helene Gelderblom	College of Science, Engineering and Technology (School of Computing)
Prof. Elizabeth Kempen	College of Agriculture and Environmental Sciences (School of Agriculture and Life Sciences, Department of Life and Consumer Sciences)
Prof. Eleanor Lemmer	College of Education (Department of Further Teacher Education)
Prof. Susan Scott	College of Law (School of Law, Department of Private Law)

Awardee spotlight: Professor Eleanor Lemmer – preaching the power of parental involvement

Prof. Tinyiko Maluleke (Deputy Registrar) and Prof. Eleanor Lemmer

In an era where educators bemoan the lack of parental involvement in students' education, Professor Eleanor Lemmer is reinforcing the idea that their participation is critical. Her research, for which she received the 2011 Women Research in Leadership Award, explores the value and benefits of having parents actively involved in learning.

Professor Lemmer believes the subject is a significant one, given that parental involvement in possibly improving student performance has been acknowledged internationally. "South Africa is primarily limited to school governance and does not include a comprehensive approach," she says. "Research in this area can make a contribution to the improvement of schooling in South Africa and links to national development goals of development. "

The Unisa community also stands to benefit from hard-working academics like Professor Lemmer. She says her research has facilitated greater interaction with students at the university. "The expertise that I have developed in research is something I enjoy sharing with others through formal and informal mentorship of colleagues. I am also able to provide a better service to my master's and doctoral students in assisting them with research design and methodology," she concludes.

Women Developing Researcher Award

The Women Developing Researcher Award is aimed at encouraging new or aspiring PhD candidates to become established researchers. To be considered for this award, a candidate must be permanently employed by Unisa, and be enrolled for PhD studies or be in possession of a PhD.

In addition, a candidate must meet at least two of the following research output requirements:

- Publication of at least three articles in one or more peer-reviewed journals in the past three years
- Publication of a scientific paper in peer-reviewed conference proceedings in the past three years
- Contribution to at least one chapter to a book in the past five years
- Contribution to one or more monographs for the specialist in the past five years
- Participation in an art exhibition and/or performance in the past three years

The awardees for 2011 are listed below.

Table 3: Winners of the Women Developing Researcher Award 2011

Name	College
Ms Nadia Ferreira	College of Economic and Management Sciences (School of Management Sciences, Department of Human Resource Management)
Ms Juanida Horne	College of Law (School of Criminal Law, Department of Police Practice)
Ms Busi Mandleni	College of Agriculture and Environmental Sciences (School of Agriculture and Life Sciences, Department of Agriculture and Animal Health)
Ms Edinah Mudimu	College of Economic and Management Sciences (School of Economic Sciences, Department of Decision Sciences)
Ms Sibongile Sindane	College of Human Sciences (School of Arts, Department of Communication Science)

Ms Busi Mandleni

Awardee spotlight: Ms Busi Mandleni – challenging climate change perceptions

It was a key moment in her academic career when Ms Busi Mandleni of Unisa's Department of Agriculture and Animal Health earned the Women Developing Researcher Award at the 2011 research awards ceremony.

Her research focus at the time of the award was climate change and adaptation of cattle and sheep farmers in the Eastern Cape. The objectives of her study included examining perceptions of cattle and sheep farmers on climate change and adaptation with the use of information from livestock farmers between 2005 and 2009. She looked at factors that affected choices of adaptation by households who kept cattle and sheep, and established the extent of awareness of climate change in the area of study.

The award and her own drive have spurred Mandleni on as she has, subsequent to receiving the award, obtained her PhD. She is grateful for the support and celebratory platforms such as awards at Unisa. "The award meant that nothing is impossible in life if you put your time, effort and focus in it," she says. "It taught me how to manage my time while I was maintaining a balance between my work, studies and private life. It also taught me to appreciate people and nature."

> *"The award meant that nothing is impossible in life if you put your time, effort and focus in it." – Ms Busi Mandleni*

Women Resilience in Research Award

The Women Resilience in Research award is awarded to a researcher who, in the last three years, has succeeded in attaining a doctoral qualification in spite of extraordinary personal circumstances that would inhibit possible completion. The award celebrates the values of perseverance, commitment and singular dedication in the pursuit of academic goals. In 2011, this award went to Professor (then Ms) Lisa van Jaarsveldt – see the spotlight profile on the next page.

Women Youngest PhD Graduate Award

As the name suggests, this award goes to the youngest female staff member who obtained her PhD during the preceding year. In 2011, this award went to Professor (then Ms) Lisa van Jaarsveldt who also won the Women Resilience in Research Award – see the spotlight profile on the next page.

Prof. Liza van Jaarsveldt

Awardee spotlight: Professor Liza van Jaarsveldt – overcoming life's hurdles

Academics face many hurdles and challenges in their careers, but for Professor Liza van Jaarsveldt from the College of Economic and Management Sciences, it was a life threatening one. She was diagnosed with aggressive stage-three breast cancer in July 2010, and despite the major setback still managed to complete her PhD.

"Even though my journey was not always easy, I persevered and stayed determined to get my degree. My supervisors constantly encouraged and motivated me during this time and assisted me greatly. I was also very fortunate to receive a lot of support from the university, my department and the College of Economic and Management Sciences," Professor van Jaarsveldt said.

Perseverance eventually led to her completing her doctoral thesis entitled *Information technology competence in undergraduate public administration curriculum*, and to receiving both the Women Resilience in Research award and Women Youngest PhD Graduate Award in 2011. "I appreciate all the opportunities with which Unisa has provided me to do research and to learn and grow. Being awarded the resilience in research award was a big honour as it made all my hard work more worthwhile," she said.

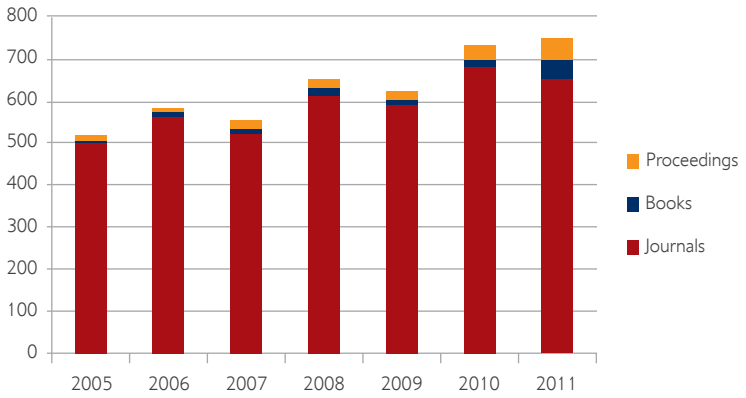
RESEARCH OUTPUTS

While research is about field and laboratory work, it ultimately is about outputs and products of the new knowledge generated. The published research findings and the completion of postgraduate degrees, especially doctorates, remain the most important research outputs. Research that is not shared has no value, and publishing results and findings is the most effective way to widely distribute the new knowledge gained.

RESEARCH PUBLICATIONS

Research outputs have been rising consistently since 2005[1]. In 2011 there was an increase from the 2010 outputs in the form of books, book chapters and conference proceedings, with a slight decline in journal articles.

Figure 1: Research outputs in terms of publications, 2005 to 2011



1 *In January 2004, the former Unisa merged with Technikon Southern Africa and incorporated the distance education component of Vista University (Vudec) to form the new Unisa. We therefore report on the period from 2005 on.*

MASTER'S AND DOCTORAL RESEARCH OUTPUTS

The College of Graduate Studies was tasked with improving the performance of research master's and doctoral candidates at Unisa. To this end the college set up an inter-college committee at the end of 2011 to coordinate master's and doctoral administration, training and examination across the university – in collaboration with dedicated offices in the other colleges. This federal approach was deemed essential to increasing Unisa's postgraduate research production, and has met with considerable success in most of the colleges as is reflected in the table below[2].

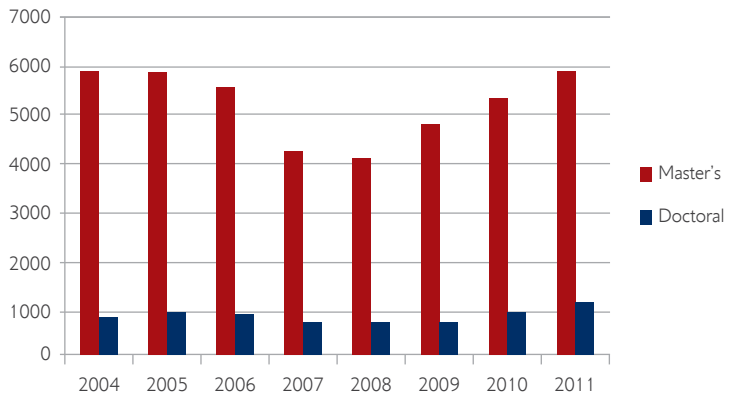
Table 4: Completion rates - master's and doctoral degrees

College and level	2009	2010	2011
College of Agriculture and Environmental Sciences	*6*	*7*	*21*
Doctoral degrees	2	3	2
Master's degrees	4	4	19
College of Economic and Management Sciences	*13*	*20*	*42*
Doctoral degrees	3	10	17
Master's degrees	10	10	25
College of Education	*23*	*32*	*35*
Doctoral degrees	10	10	14
Master's degrees	13	22	21
College of Human Sciences	*94*	*69*	*147*
Doctoral degrees	42	29	53
Master's degrees	52	40	94
College of Law	*28*	*6*	*24*
Doctoral degrees	12	1	5
Master's degrees	16	5	19
College of Science, Engineering and Technology	*5*	*10*	*14*
Doctoral degrees	2	2	2
Master's degrees	3	8	12
Total for Unisa	*169*	*144*	*283*
Doctoral degrees	*71*	*55*	*93*
Master's degrees	*98*	*89*	*190*

2 *Please note that the figures presented here are provisional pending Department of Higher Education and Training approval. Results reflect research degrees only.*

Master's and doctoral enrolments displayed a year-on-year increase for the fourth year in a row, as depicted in the figure below. Master's degree enrolments increased by 1,8% compared to 2010 (an increase from 5 459 to 5 894), while doctoral degree enrolments increased by 0,4% compared to 2010 (an increase from 1 024 to 1 258).

Figure 2: Enrolments 2004 to 2011 - master's and doctoral degrees



RESEARCH SUPPORT PROGRAMMES

Unisa has introduced numerous programmes for the purpose of enhancing its research outputs. These programmes include, but are not limited to, the Master's and Doctoral Support Programme, the Postdoctoral Research Fellowship Programme and the research professorship initiative. These three initiatives are discussed below.

THE MASTER'S AND DOCTORAL SUPPORT PROGRAMME

In response to the challenges of shortage of fulltime equivalent (FTE) researchers, which is made obvious through the annual science indicator published by the Department of Science and Technology, Unisa crafted the Master's and Doctoral Support Programme (MDSP) in 2008.

The overall aim of the programme is to effect equity and redress by providing targeted support to members of staff in general, and in particular to black, female and disabled researchers pursuing master's and doctoral qualifications. An important aspect of the programme is the improvement of staff qualifications at the highest levels, thereby responding directly to the Unisa 2015 strategic targets of incrementally developing research human capital development, enabling a research culture and improving research outputs. The programme is modelled on and designed to complement the National Research Foundation's (NRF's) Thuthuka Programme. It provides support to Unisa staff members who do not qualify for NRF Thuthuka support because they are (a) working on a master's degree, (b) above the age of 45 or (c) not South African citizens (note that some of these elements of the Thuthuka programme were changed in the redesigned programme implemented in 2011). Between 2008 and 2011, the MDSP supported 100 doctoral and 60 master's students, of whom 91 were female and 69 male. To date the programme has spent R3,865,906.21 to support designated researchers. Table 5 indicates the distribution of grants by race and per college or other unit for the period 2008 to 2011.

Table 5: MDSP grants 2008 to 2011

College/Other unit: MDSP grants by race	2008	2009	2010	2011	TOTAL
College of Agriculture and Environmental Sciences	3	1	1		5
Black	2	1	1		4
White	1				1
College of Economic and Management Sciences	4	16	7	14	41
Black	2	12	3	8	25
Coloured	2				2
White		4	4	6	14
College of Education				8	8
Black				8	8
College of Graduate Studies		1	1		2
Black		1	1		2
College of Human Sciences	15	21	9	9	54
Black	13	11	6	7	37
Coloured		2		1	3
Indian		2			2
White	2	6	3	1	12
College of Law	4	5		3	12
Black	1	4			5
Indian	2			1	3
White	1	1		2	4
College of Science, Engineering and Technology		6	3	3	12
Black		5	1	1	7
Indian		1		1	2
White			2	1	3
School of Business Leadership	1				1
Black	1				1
Professional and Administrative Research Group	2	10	5	6	23
Black	2	8	3	3	16
White		2	2	3	7
Total for Unisa	29	60	26	43	158

Dr Malebo Tibane

MDSP spotlight: Dr Malebo Tibane

Dr Malebo Tibane of the College of Science, Engineering and Technology's Department of Physics started researching at honours level and advanced to PhD studies in 2005. "In embarking on this journey I was inspired by a combination of things: my MSc and PhD supervisor, Professor Phuti Ngoepe, new scientific discoveries, my curiosity about how things work, determination to develop problem-solving skills, a passion for learning new things, and contributing to the to the world economy," she says.

With assistance from the MDSP Dr Tibane conducted computational physics research investigating the potentially useful and undiscovered binary metal alloys aimed at prolonging the service life of gas turbine engines used in aircrafts or jets. Her dissertation is entitled *Phase Stability Study of Pt-Cr and Ru-Cr Binary Alloys*. "Work study balance and publishing were my two greatest challenges," says Dr Tibane, "and the MDSP funds allocated for travel logistics (supervisor visit), dissertation editing and binding made a major difference. I had a good experience with MDSP support and would like to single out the highly professional fund administrator for special praise."

THE POSTDOCTORAL FELLOWSHIP PROGRAMME

Postdoctoral research is usually undertaken by individuals who have recently completed their doctoral studies. The reasoning behind this is that it gives these individuals an exclusive opportunity to improve their understanding of a specialist subject and, in the process, imbue them with unique and sought-after skills.

Unisa – a university that is committed to excellence in research – established its Postdoctoral Fellowship Programme in 2009, and at the end of 2010 a total of 10 postdoctoral fellows were appointed.

The advancement of these fellows is seen as essential not only in terms of their own individual training but in terms of elevating the status of the university as a whole through the fellows' research outputs.

The programme recruits doctoral graduates holding doctoral qualifications that are not from Unisa and that are not older than five years. The programme annually advertises available postdoctoral positions.

The names of the postdoctoral appointees are listed below.

Table 6: Postdoctoral fellows 2011

Name	College/Institute	Research focus
Dr CN Abrahams	College of Human Sciences (School of Social Sciences, Department of Development Studies)	Development studies
Dr OA Aiyegoro	College of Agriculture and Environmental Sciences (School of Agriculture and Life Sciences, Department of Agriculture and Animal Health)	Agriculture and Environmental Sciences

Name	College/Institute	Research focus
Dr BN Brink	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)	Urban regeneration, water provision and transport infrastructure
Dr M Fombad	College of Economic and Management Sciences (Institute for Corporate Citizenship)	Collaborative governance and accountability
Dr S Mavundla	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)	Synthesis of polymeric materials for solar applications and fabrication of solar cell devices
Dr IP Molobela	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)	Impact of microbial biofilms in the water industry

Name	College/Institute	Research focus
Dr OK Omorogiuwa	Institute for Open Distance Learning	Assessment as an instrument for learning enhancement, student achievement in open distance learning (ODL), evaluation of ODL programmes
Dr H Ramantswana	College of Human Sciences (School of Humanities, Department of Old Testament and Near Eastern Studies)	Old Testament creation stories
Dr RV Tatu	College of Human Sciences (School of Arts, Department of Arabic Studies)	Afterlife in Zoroastrianism, Christianity, Islam and the essence of the religious experience of humankind
Dr M Togo	College of Economic and Management Sciences (Institute for Corporate Citizenship)	Business and climate change

Dr Hulisani Ramantswana

Postdoctoral fellow spotlight: Dr Hulisani Ramantswana – understanding the cosmos

Dr Hulisani Ramantswana, from the Department of Old Testament and Ancient Near Eastern Studies, is one of the scholars who have benefited from Unisa's Postdoctoral Fellowship. Dr Ramantswana's area of focus is Christianity, specifically, the Old Testament and the subject of creation. In particular, he researches ancient Near Eastern literature to enhance an understanding of the cosmos. "The aim of my research is to gain an understanding of the cosmos and the human responsibility toward the cosmos from a biblical theological perspective," he says.

Commenting on the Postdoctoral Fellowship Programme, Dr Ramantswana says that it presents emerging researchers with a space within which they can conduct research in dialogue and in collaboration with established and other developing researchers. "Research lies at the heart of this programme," he says. "The performance of each fellow is measured by his/her research outputs. This requires us as fellows to set the bar high enough to ensure that we meet both Unisa's output targets and our personal targets, as the fellowship offers us an opportunity to position and enhance our future careers."

RESEARCH PROFESSORS

In 2010 Unisa introduced a new academic rank: that of research professorship. This is a mechanism for, among other things, increasing dedicated research and innovation participation, increasing specialised expertise and improving research outputs. The first group of 14 research professors were appointed and assumed their research professorial duties at the beginning of 2011.

Unisa's cadre of research professors for 2011 are listed below.

Table 7: Research professors 2011

Name	College	Research focus
Prof. Jane Carruthers	College of Human Sciences (School of Humanities, Department of History)	Environmental history
Prof. Ruth de Villiers	College of Science, Engineering and Technology (School of Computing)	E-learning
Prof. Cornel du Toit	College of Human Sciences (Research Institute for Theology and Religion)	Post-reformation theology
Prof. Sieg Eiselen	College of Law (School of Law, Department of Private Law)	International and electronic trade law

Name	College	Research focus
Prof. Ulrike Kistner	College of Human Sciences (School of Arts, Department of Classics and World Languages)	Societal value of the humanities, post-apartheid human rights
Prof. Eleanor Lemmer	College of Education (Department of Educational Foundations)	Parental involvement in learning
Prof. André Mangu	College of Law (School of Law, Department of Public Constitutional and International Law)	Constitutionalism and democracy in post-colonial Africa
Prof. Malose Mphahlele	College of Science, Engineering and Technology (School of Science, Department of Chemistry)	Synthesis, structural property and biological activity studies of heteroatom-containing compounds
Prof. Tana Pistorius	College of Law (School of Law, Department of Mercantile Law)	Intellectual property law and information technology law
Prof. Johan Potgieter	College of Law (School of Law, Department of Private Law)	Law of delict and law of damages
Prof. Johan Prinsloo	College of Law (School of Criminal Justice, Department of Criminology and Security Science)	Recidivism
Prof. Rinie Schenck	College of Human Sciences (School of Social Sciences, Department of Social Work)	Participatory community practice
Prof. Trudie Steyn	College of Education (School of Education, Department of Further Teacher Education)	Professional development of educators, invitational education
Prof. Stephan Terblanche	College of Law (School of Law, Department of Criminal and Procedural Law)	Issues relating to correctional services

The initiative shows evidence that it will live up to expectations – in summary, the following research outputs were produced by these research professors:

- 45 accredited journal outputs
- 12 books and book chapters
- 34 peer-reviewed conference papers
- 1 invited conference guest speaker
- 13 master's students graduated
- 14 doctoral students graduated

Prof. Jane Carruthers

Research professor spotlight: Professor Jane Carruthers – environmental historian extraordinaire

Professor Jane Carruthers, a National Research Foundation (NRF) B1-rated researcher in the Department of History, is a Research Associate of the Centre for Invasion Biology at Stellenbosch University and Chair of the Academic Advisory Board of the Rachel Carson Center at Ludwig Maximilian University in Munich. She has been at Unisa since 1980. Professor Carruthers was one of South Africa's first environmental historians and has published widely on this topic. Other fields of research include the history of science, colonial art, cartography and comparative Australian-South African history.

"The research professor initiative enables academics with productive publishing records to pursue their research free from undergraduate teaching responsibilities, and it enables Unisa to better meet its research targets," says Professor Carruthers. And the proof of the pudding is in the eating: since her appointment to this post in 2011, Professor Carruthers has published eight articles in accredited scholarly journals, contributed five chapters to books, attended many international and local conferences and, as President of the International Consortium of Environmental History Organisations, is arranging a World Congress to be held in Portugal in 2014.

Her latest research project is to research and write a book on the history of the natural sciences in South Africa's national parks over the 20th century.

NRF RATINGS AND EVALUATION

The National Research Foundation (NRF) evaluation and rating system is currently the only known peer review system worldwide that judges the standing of an individual on the basis of his/her research outputs. All other rating and ranking systems judge the standing of individual publications (impact factors) or the university in its entirety (university rankings).

During the early stages of its establishment (1984 to 2001), the rating system was reserved for the natural sciences with the rating of researchers meant for purposes of prioritising to whom research funding should be directed in the various disciplines. In 2002 the evaluation and rating system was opened up to the social sciences.

There is a growing participation in the NRF evaluation and rating system not only by South African higher education researchers, but by researchers from all over the world. The rating system gauges one's standing in relation to other researchers in their disciplines. Since 1984 the number of rated researchers has increased markedly, from 508 to 2,473 in 2012. Unisa has set NRF rating goals and targets in its Research and Innovation Strategy: 130 rated researchers by 2012, 140 by 2013 and 150 by 2014. These translate into new annual ratings of 30 in 2012, 35 in 2013 and 40 in 2014.

There is a growing participation in the NRF evaluation and rating system not only by South African higher education researchers, but by researchers from all over the world.

There are five main rating categories:

- **A rating:** Awarded to researchers who are unequivocally recognised by their peers as leading international scholars in their field for the high quality and impact of their recent research outputs.
- **B rating:** Awarded to researchers who enjoy considerable international recognition by their peers for the high quality and impact of their recent research outputs.
- **C rating:** Awarded to established researchers with a sustained recent record of productivity in the field and who are recognised by their peers as having:
  - produced a body of quality work, the core of which has coherence and attests to ongoing engagement with the field
  - demonstrated the ability to conceptualise problems and apply research methods to investigating them.
- **P rating:** Awarded to young researchers (normally younger than 35 years of age), who have held a doctorate or equivalent qualification for less than five years at the time of application and who, on the basis of exceptional potential demonstrated in their published doctoral work and/or their research outputs in their early post-doctoral careers, are considered likely to become future leaders in their field.
- **Y rating:** Awarded to young researchers (40 years or younger), who have held a doctorate or equivalent qualification for less than five years at the time of application, and who are recognised as having the potential to establish themselves as researchers within a five-year period after evaluation, based on their performance and productivity as researchers during their doctoral studies and/or early post-doctoral careers.

Sub-categories within the above main categories (for example A1 and A2) serve to further distinguish the exact nature of the rating.

In 2011 four newly appointed researchers joined Unisa with existing NRF ratings, seven researchers were re-rated and nine were rated for the first time. Most notably, Professor Alan Weinberg from English Studies received an A rating. NRF ratings for 2011 are provided in table 8.

Table 8: NRF ratings for 2011

Name	College	Rating	Status
Prof. Ayo Afolabi	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)	Y2	Newly rated
Prof. Philip Bosman	College of Human Sciences (School of Arts, Department of Classics and World Languages)	C1	Newly rated
Prof. Johan Coetser	College of Human Sciences (School of Arts, Department of Afrikaans and Theory of Literature)	C2	Re-rated
Prof. Tilman Dedering	College of Human Sciences (School of Humanities, Department of History)	B3	Re-rated
Prof. Themba Dube	College of Science, Engineering and Technology (School of Science, Department of Mathematical Sciences)	C1	Newly rated
Prof. Marc Duby	College of Human Sciences (School of Arts, Department of Art History, Visual Arts & Musicology)	C2	Joined with rating
Prof. Mariki Eloff	College of Science, Engineering and Technology (School of Computing)	C3	Re-rated
Prof. Ulrike Kistner	College of Human Sciences (School of Arts, Department of Classics and World Languages)	C1	Re-rated

Name	College	Rating	Status
Prof. Jan Kroeze	College of Science, Engineering and Technology (School of Computing)	C2	Joined with rating
Prof. Enrico Lombardi	College of Science, Engineering and Technology (School of Science, Department of Physics)	C3	Newly rated
Prof. Corinne Meier	College of Education (School of Teacher Education)	C3	Newly rated
Prof. Pumela Msweli	College of Economic and Management Sciences (Graduate School of Business Leadership)	C3	Joined with rating
Prof. Inderasan Naidoo	College of Science, Engineering and Technology (School of Science, Department of Mathematical Sciences)	Y2	Newly rated
Prof. Nicholas Odhiambo	College of Economic and Management Sciences (School of Economic Sciences, Department of Economics)	C2	Newly rated
Prof. Annet Oguttu	College of Law (School of Law, Department of Mercantile Law)	C2	Newly rated
Prof. Petrus Potgieter	College of Economic and Management Sciences (School of Economic Sciences, Department of Decision Sciences)	C3	Newly rated
Prof. Pantaleo Rwelamila	College of Economic and Management Sciences (Graduate School of Business Leadership)	C1	Re-rated
Prof. Brigitte Smit	College of Education (Department of Further Teacher Education)	C2	Joined with rating
Prof. Piet Swanepoel	College of Human Sciences (School of Arts, Department of Afrikaans and Theory of Literature)	C2	Re-rated
Prof. Alan Weinberg	College of Human Sciences (Emeritus Professor)	A2	Re-rated

The rated researchers in the list above joined many other Unisa academics who hold NRF ratings. The total number of NRF-rated researchers increased from 113 to 115. The table below indicates the increase in NRF-rated researchers from 2005 to 2011. The table also provides a breakdown per NRF category.

Table 9: NRF-rated researchers 2005 to 2011

NRF categories	2011	2010	2009	2008	2007	2006	2005
A	1						
B	11	12	14	10	8	5	3
C	91	90	72	46	33	27	12
Y	9	7	5	3	1	3	1
L	3	4	6	5	5	1	2
TOTAL	115	113	97	64	47	36	18

Emeritus Professor Alan Weinberg

A-rated researcher profile: Professor Alan Weinberg

Alan Weinberg is an Emeritus Professor who served Unisa for 41 years before his retirement. His academic career at Unisa began in the Department of English Studies in 1970 and he held the position of full professor from 1996.

Professor Weinberg became the first NRF A-rated[3] researcher at the College of Human Sciences after years of a proven track record of quality research. Drawn to Romantic studies, he obtained his master's degree on the poetry of Samuel Taylor Coleridge and completed his PhD on English Romantic poet Percy Bysshe Shelley's Italian experience. His thesis was published in 1991 by MacMillan, London, after his work was described as "truly excellent" by one of America's most distinguished Shelleyans, the late Professor Stuart Sperry of the University of Indiana.

Weinberg has served on the NRF Panel for Literature, Language and Linguistics from 2005, chairing it in 2007. He has also served on the Unisa Press Senate Committee as literary and cultural representative. He has been an active member of the Keats-Shelley Society in the USA and Rome, the North American Society for the Study of Romanticism and the Associazione Professionisti Italiani. He co-convened the International Bicentenary Shelley Conference in 1992, and the 3rd Wole Soyinka International Conference in 2005, both hosted in the Department of English at Unisa. He was awarded a special Chancellor's Prize in 2011 in honour of his NRF A rating.

Y-rated researcher profile: Professor Ayo Afolabi

Professor Ayo Afolabi's Y2 rating[4] from the NRF (accompanied by a two-year research grant from the same organisation) in 2011 bears testimony to his excellent academic record coupled with academic zeal and a passion for research, teaching and community engagement. Professor Afolabi has over 40 peer-reviewed journal and conference publications and is a professional member of nine national and international societies.

His research interests are in carbon nanotechnology, fuel cell technology, materials characterisation, corrosion engineering and extractive metallurgy. He has held a number of positions in the College of Science, Engineering and Technology, and is a leader of the Fuel Cell and Nanotechnology Research Flagship in the college.

Professor Afolabi is a great mentor to young South Africans and is currently supervising six postgraduate students in the university. He also serves as a reviewer for seven international journals.

3 *See page 29 for a definition of the NRF's A-rating*
4 *See page 29 for a definition of the NRF's Y-rating*

Research niche areas

Both the funding and the human capital essential for research are increasingly dwindling. With a heightened level of intercontinental competition for these resources, it becomes imperative that higher education institutions become specialised.

Specialisation can be sought through the identification and targeting of research priority areas that are pertinent to the challenges that face the country or the region. This is achieved through a process that is called selective concentration, wherein higher education institutions become selective and are specific about the areas in which they want to be research leaders and thereby concentrate their efforts, investments and incentives in such areas.

The South African National Research and Development Strategy and the country's Ten-Year Innovation Plan provide some guidelines regarding the priorities of South Africa and the sub-region. These are priority areas in which South Africa is willing and eager to invest its research resources for greater societal impact. Unisa's niche areas, which are imbedded in the Research and Innovation Strategy, take their cue from both the above-mentioned blueprints.

After consultation with all the stakeholders and in light of both the national research priorities and the vision and mission of the university, the following five broad research niche areas were identified in 2009 and are still highly relevant:

- Knowledge generation and human capital development in response to the needs of South Africa
- The promotion of democracy, human rights and responsible citizenship
- Innovation and capacity building in science and technology
- Economic and environmental sustainability
- Open distance learning

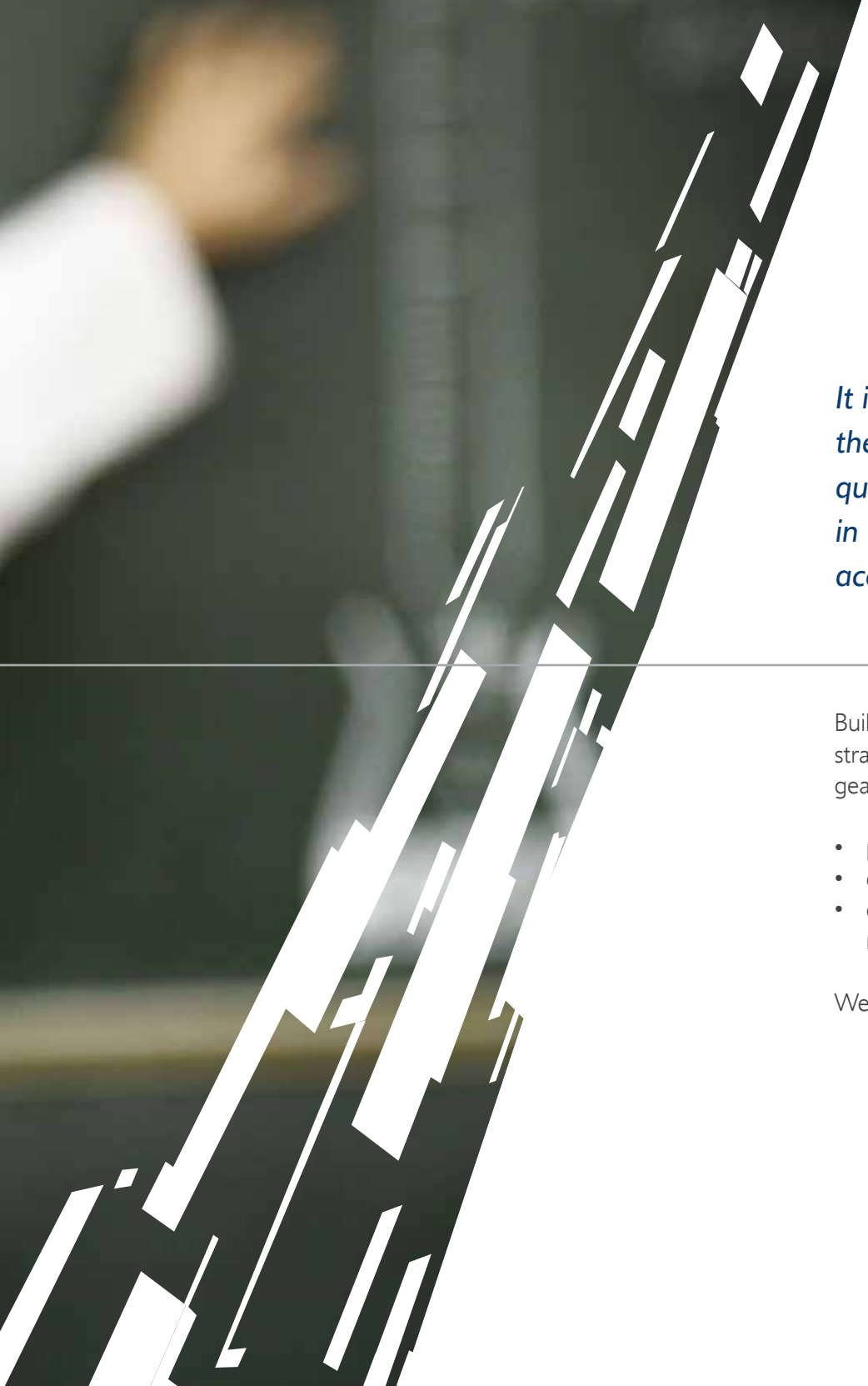
These niche areas are broad enough to allow for the four major types or modes of research to be undertaken:

- Blue-sky research: scientific research in domains where "real-world" applications are not immediately apparent
- Multi-, inter- and transdisciplinary (MIT) research: research informed by multiple backgrounds to seek solutions that singular disciplines seem unable to provide
- Applied research: systematic inquiry involving the practical application of science
- Reflexive research: research aimed at the systematic understanding, probing and interpreting of accepted, contested and unthought-of dispositions, assumptions and beliefs, in and about research, in the continuous quest for self-awareness and changed praxis

This section includes developments in each of the five niche areas during the course of 2011.

NICHE AREA 1

Knowledge generation and human capital development in response to the needs of South Africa



It is no secret that the country and, indeed, the continent experience a scarcity of qualified and skilled researchers especially in the natural, engineering, computing and accounting sciences.

Building research capacity therefore is imperative and a strategic focus at Unisa. To this end, research efforts are geared towards

- producing the next generation of researchers
- enabling researchers to acquire doctoral degrees
- enabling post-doctoral researchers to acquire skills for maximum research productivity

We present two highlights in this regard.

Ms Puleng Segalo

FULBRIGHT SCHOLARSHIP

Sponsored by the United States Department of State, Bureau of Educational and Cultural Affairs, the highly coveted J. William Fulbright Scholarship provides funding for students, scholars, teachers, and professionals to undertake graduate study, advanced research, university teaching, and teaching in elementary and secondary schools. Ms Puleng Segalo is currently working on her PhD dissertation investigating how women's private memories of the apartheid period within South Africa influence how they make sense of their newly found freedom, and she has been awarded this scholarship by the American Embassy in Pretoria.

Ms Segalo is passionate about her work in the Psychology Department in the School of Social Sciences. Her research interests relate to the notion of identity construction in various contexts and also focus on issues of gender, power, race and sexuality, and how these interplay, as well as critical feminist theories. After completing her PhD, Ms Segalo would like to return to teaching, research and being involved in the general transformation of higher education.

STAFF DEVELOPMENT RESEARCH OPPORTUNITIES

The development of a cohort of young researchers, firstly towards the completion of their doctoral qualifications and secondly at the postdoctoral research level, is among South Africa's highest priorities. The South African Science Indicators – a survey that is undertaken annually by the Human Sciences Research Council – among other measures, identifies the ageing cohort of researchers as being responsible for more than 60% of South Africa's research outputs.

There are numerous initiatives at the national governmental level (driven by the Department of Science and Technology and the National Research Foundation) aimed at ensuring that a new cohort of researchers is developed to take over the future production role. These include the Thuthuka Programme (aimed at advancing the equity and redress agenda within the research sphere), Qualification Improvement Grants and the Development Fund for NRF Y-Rated Researchers. The researchers listed below all received Qualification Improvement Grants and allocations from the Development Fund for NRF Y-Rated Researchers.

Table 10: Staff research development grant recipients for 2011

Recipient	College
Mr Barry Ackers	College of Economic and Management Sciences (School of Accounting Sciences, Department of Auditing)
Prof. Ayo Afolabi	College of Science, Engineering and Technology (School of Engineering, Department of Civil and Chemical Engineering)

Recipient	College
Prof. Mzikayise Binza	College of Economic and Management Sciences (School of Management Sciences, Department of Public Administration and Management)
Ms Motshedisi Chauke	College of Human Sciences (School of Social Sciences, Department of Health Studies)
Mr Hadley Clayton	College of Science, Engineering and Technology (School of Science, Department of Chemistry)
Dr Matseliso Mokhele	College of Education (Department of Educational Studies)
Prof. Inderasan Naidoo	College of Science, Engineering and Technology (School of Science, Department of Mathematical Sciences)
Ms Rebecca Tladinyane	College of Economic and Management Sciences (School of Management Sciences, Department of Industrial and Organisational Psychology)
Ms Mitzi Wiese	College of Law (School of Law, Department of Private Law)

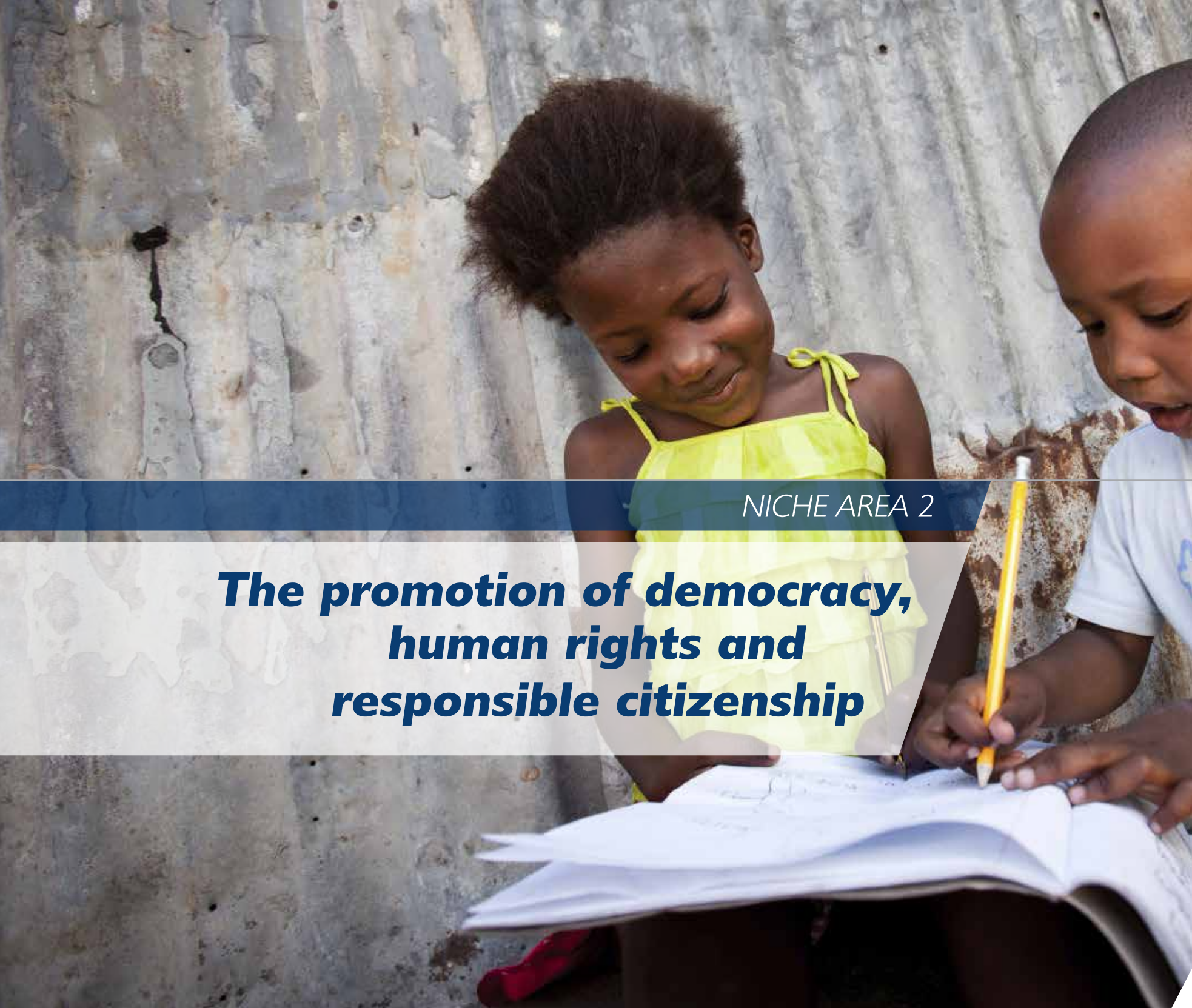
Grant recipient spotlight: Mr Barry Ackers

Mr Barry Ackers

Mr Barry Ackers is currently on a 12-month period of sabbatical leave sponsored by the National Research Foundation (NRF), which is contributing to funding and completing his Doctorate in Commerce (Auditing) with his thesis entitled *Corporate social responsibility assurance – the role of the audit profession.*

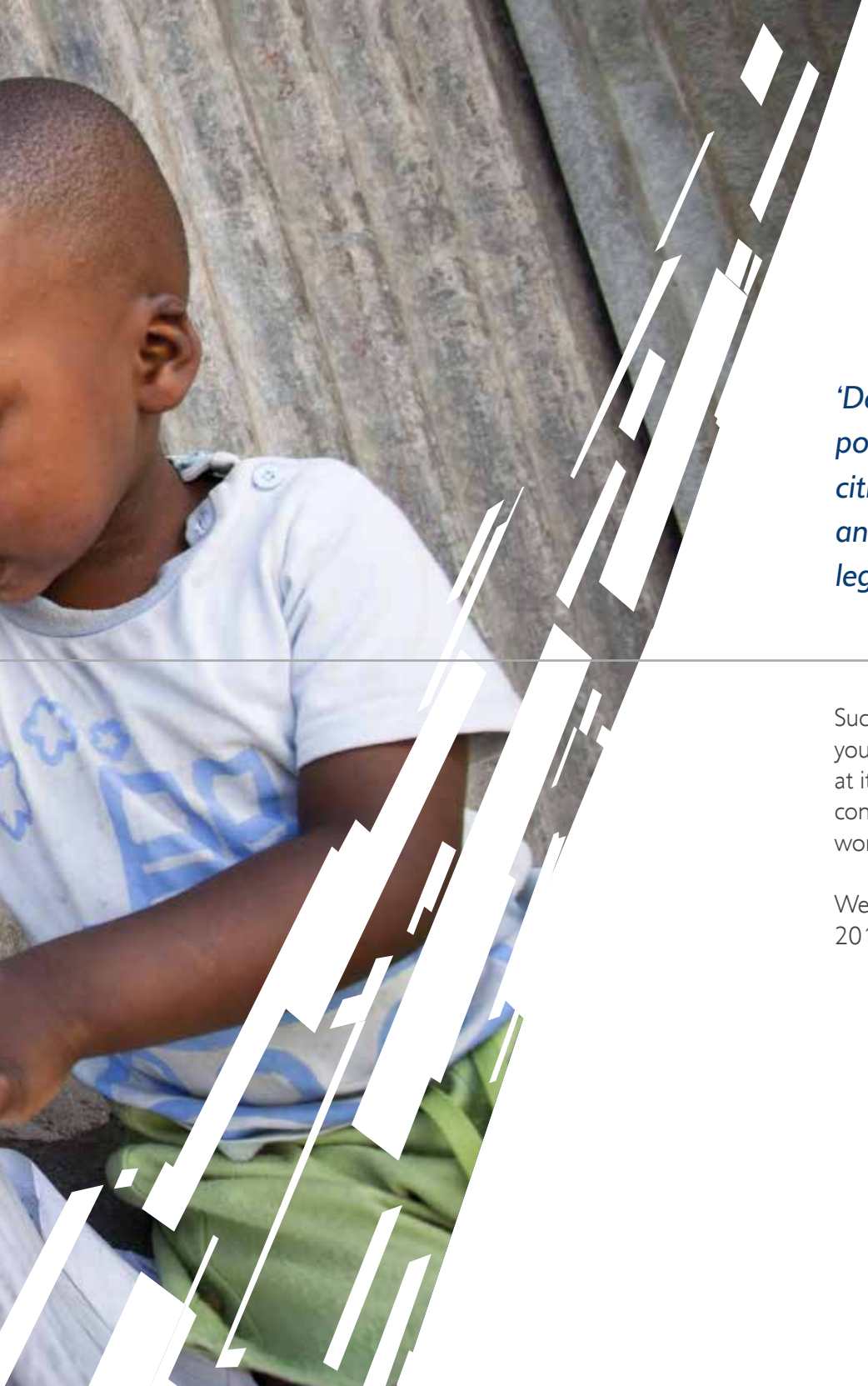
Mr Ackers's research focuses heavily on examining the "soft issues" of corporate social responsibility or sustainability from an accountability perspective. "Unisa has gone out of its way to encourage and support my research goals," says Ackers. "I realise that research involves acquiring and mastering a new set of skills, and that many may be apprehensive about starting. The reality is that you have to take the first step."

"Unisa has gone out of its way to encourage and support my research goals." – Barry Ackers



NICHE AREA 2

The promotion of democracy, human rights and responsible citizenship



'Democracy' has become the accepted political world model of governance in which citizenship is exercised. The various dimensions and aspects of democracy are therefore a legitimate and important focus for research.

Such research is especially pertinent for South Africa as a young democracy. Given its focus and the human resources at its disposal, Unisa is well placed to make an important contribution to the study of democracy in Africa and in the world.

We take a look at highlights experienced in this regard during 2011.

The Department of Geography from the College of Agriculture and Environmental Sciences (CAES) hosted a two-day symposium in Mathopestat, a village near Rustenburg in the Bojanala District of the North West Province. The symposium formed part of Ms Melanie Nicolau's (right) current research project. Pictured with her are Prof. Jimmy Hendrick (Director of Environmental Sciences), and Mr Jacob Moralo (an artist from the community).

AS EASY AS ABCD – ASSISTING COMMUNITIES TO DRIVE DEVELOPMENT

In March 2011 the Department of Geography launched a community engagement project in partnership with the Greater Rustenburg Community Foundation (GRCF) in the Bojanala Region of the North West Province. Under the theme, *Back to the ABCDs: Creating an enabling environment for sustainable socio-economic development at grassroots level through community driven initiatives*, the department hosted a two-day symposium with the hope that the project would grow in strength and ensure that the work of academics in the discipline of geography would be relevant to the community and South Africa.

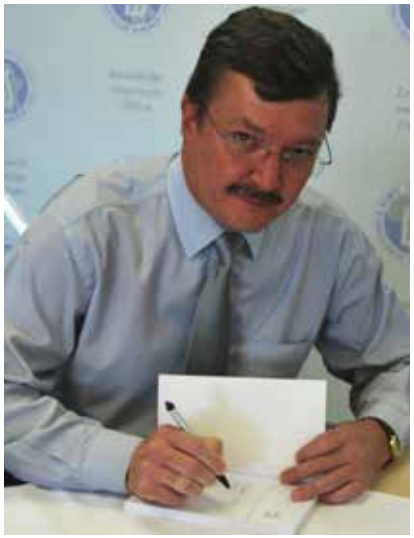
The ABCD (asset-based community development) approach espouses the belief that communities can take the lead in identifying their own problems and the solutions to those same problems. ABCD is community-based development, built on the principle that each community already has a tremendous number of assets, and if properly accessed and channelled will ensure success in sustainable development. As a result of ABCD, the Mathopestat community has realised the many assets and potential they have to better themselves.

The research aims to develop a South African specific asset-mapping tool that will play a role in achieving responsible and high impact social change within communities that will enable them to achieve the Millennium Development Goals (MDGs). At the same time the research addresses the personal goal of departmental chair Ms Melanie Nicolau to support communities in a drive to develop a sense of pride and belonging in their own communities, and in this way take the responsibility of their own futures and opportunities.

During the last two years, the department has arranged two conferences to showcase and discuss the evolution of the asset-mapping tool and the methodology of application. A number of publications on the research project have appeared over the last two years, and peer reviewed publications will be published shortly.

COMBATING CRIME THE CLEVER WAY

Unisa was the first tertiary institution in South Africa to offer specialised degrees in the criminal and forensic investigation field through its School of Criminal Justice. The committees that developed these degrees were founded by Professor Rudolph Zinn, a world authority on the subject of criminal investigation.



Prof. Rudolph Zinn signs a copy of his book Home Invasions: Robbers disclose what you should know

2011 saw Professor Zinn achieving research excellence through his focus on the combating of motor vehicle and house robbery through intelligence-led policing. He has also researched and developed a blueprint for communities to develop and sustain effective community safety networks to safeguard their own neighbourhoods.

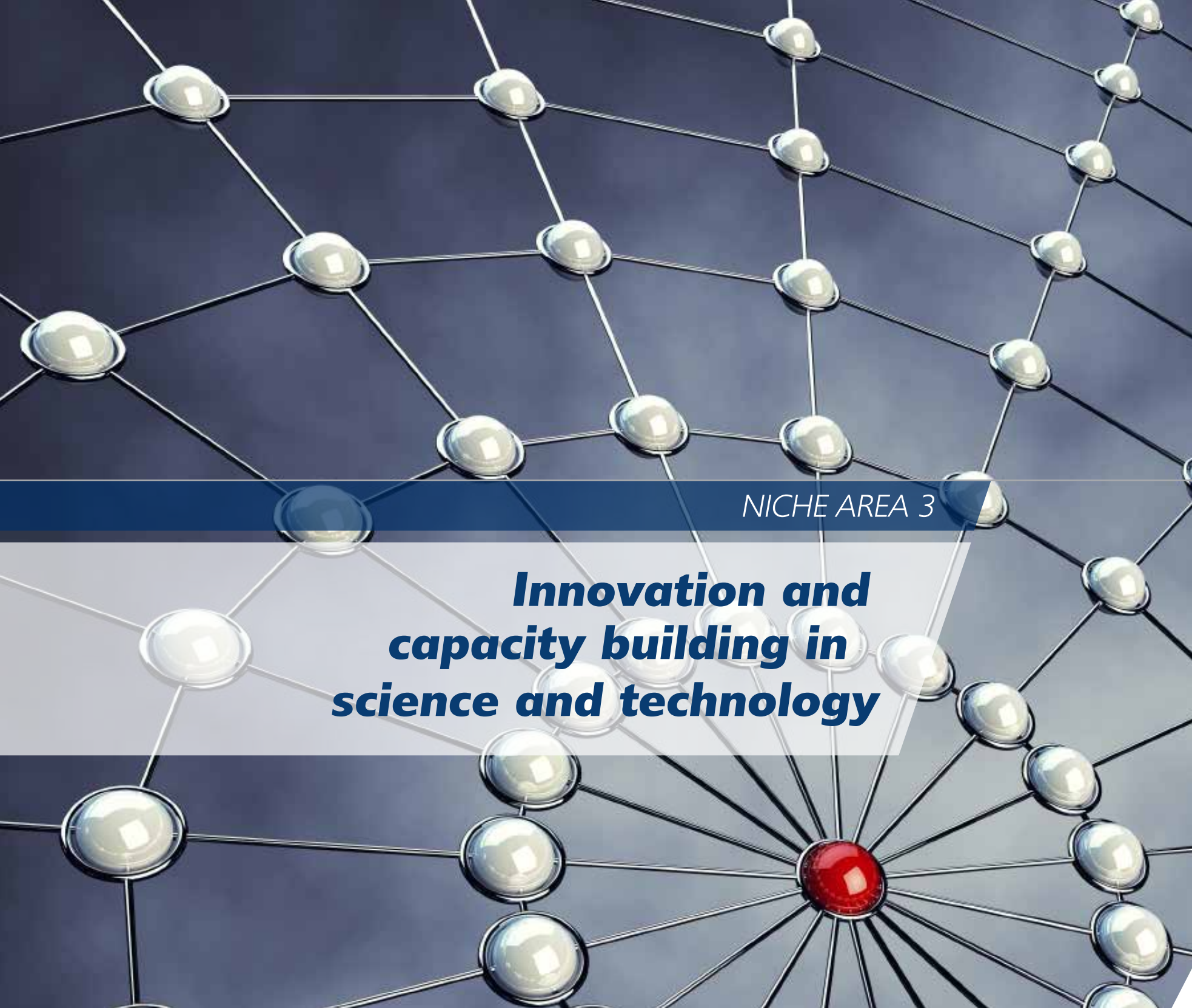
The former police detective, who holds a number of high court recommendations for solving complex violent criminal cases, has published numerous articles and chapters in accredited journals and books on crime. A highlight for Professor Zinn, and the School of Criminal Justice, during 2011 was the launch of the book *Home Invasions: Robbers disclose what you should know.* Based on interviews with convicted house robbers and analyses of police case dockets, the book brings to light crucial information on the modus operandi and motivation of these criminals.

AFRICA SPEAKS CONTINUES TO INVIGORATE RESEARCHERS

In 2008, in the College of Human Sciences introduced the Africa Speaks (African Visiting Scholar) Lecture Series. This innovative lecture series was established by the college under the leadership of its Executive Dean, Professor Rosemary Moeketsi. "This series aims to nurture, develop and sustain a vibrant community of researchers and intellectuals in the college, connected to the African continent and Diaspora. By doing so, there are continued efforts to be innovative in the quest for truth and knowledge, whilst addressing the transformative needs of a developmental African state," says Professor Moeketsi. "The underlying theme of the Africa Speaks lectures is to highlight the value and relevance of the social and human sciences in academia and thereby encourage our emerging academics to engage in cutting-edge research."

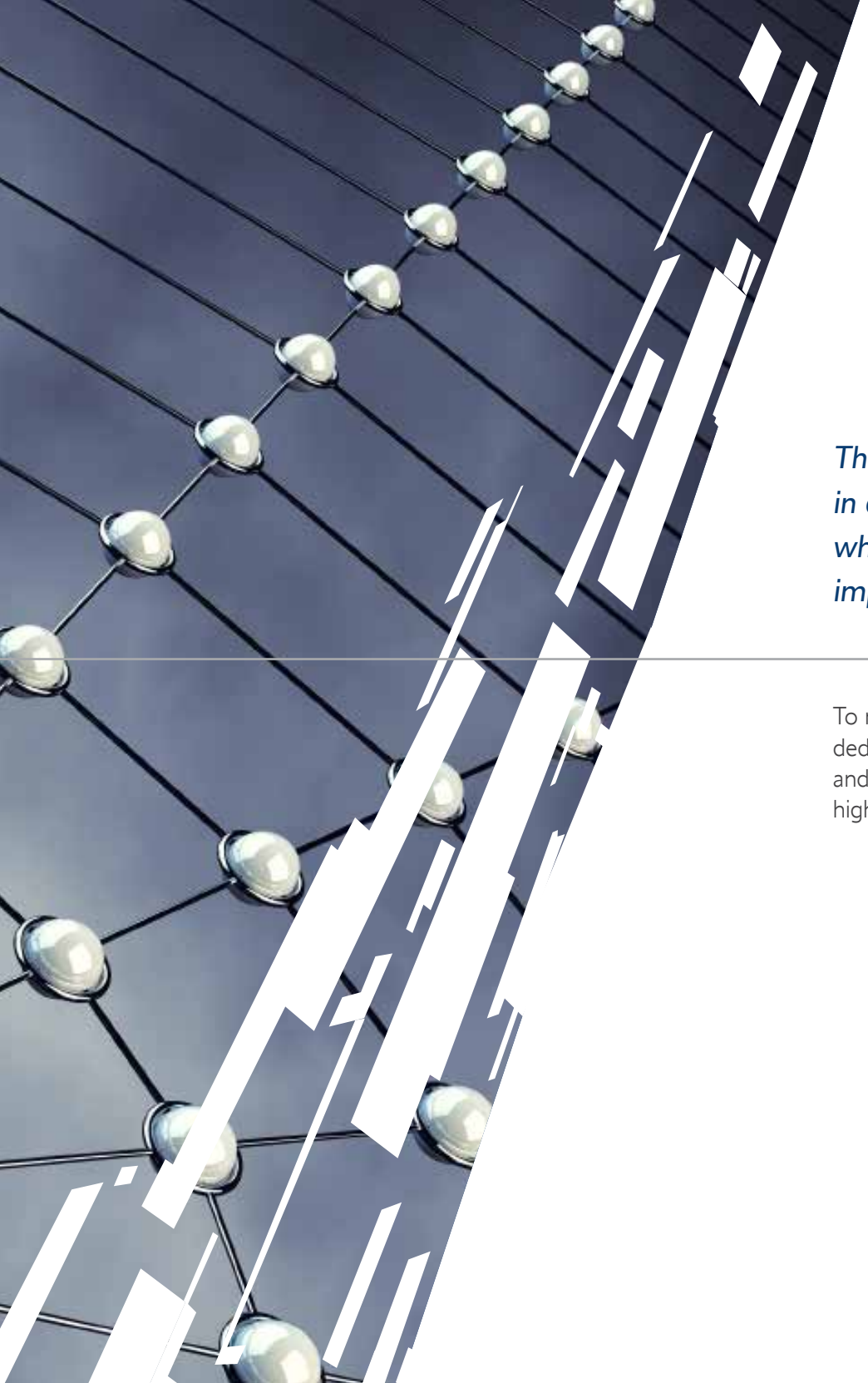
In 2011 the following Africa Speaks lectures were presented:

- *The crisis of elections and the future of democracy in Africa:* Professor Achille Mbembe of the Wits Institute of Social and Economic Research shared his thoughts on elections in Africa and called on academics, researchers and intellectuals to help foster new forms of leadership and institutions which can lead to true democracy.
- *Knowledge production in Africa: questions of epistemology and research for social transformation in Africa:* Tukumbi Lumumba-Kasongo, Professor of Political Studies at Wells College in New York, argued that intellectuals who raise pertinent issues about Africa are in dire need of the development of relevant knowledge production systems.



NICHE AREA 3

Innovation and capacity building in science and technology



There is growing consensus that we live in a knowledge-based economy era in which natural and applied sciences are very important.

To make a contribution in these areas, Unisa continued dedicating substantial resources to the production of scholars and researchers in these fields during 2011. A number of highlights are discussed in this section.

Prof. Ayo Afolabi

INVESTIGATING VIABLE ALTERNATIVES

During 2011 major strides were made in the College of Science, Engineering and Technology's (CSET's) Fuel Cell & Nanotechnology Research Flagship. Professor Ayo Afolabi, project leader, says that it will contribute greatly to the conservation of foreign exchange and exploitation of our naturally occurring resources. "This study will open more challenges on investigations and developments of carbon nanotechnology, fuel cell technology and other technological practices in the country for nation building."

The results of this work are expected to give a technologically sound, environmentally friendly, and commercially viable process route for the fabrication of membrane electrode assembly for fuel cell that will be of benefit for domestic and industrial purposes in South Africa and the world at large.

MAN MEETS MACHINE

The design of usable computer interfaces is a primary concern of human-computer interaction (HCI), and the evaluation of such interfaces forms an essential part of the design process. CSET's HCI Research Flagship utilises the School of Computing's HCI laboratory to regularly conduct usability and eye-tracking studies for research and design purposes. The flagship project sets out to, among others, determine how designers of technology and software applications can fulfil the needs of special user groups, for example young children, the elderly and disadvantaged learners.

Prof. Helene Gelderblom with colleague Ms Daphne Becker from Unisa's Human-Computer Interaction research group in the School of Computing

Comments project leader Professor Helene Gelderblom: "This project has allowed us to expand the HCI laboratory facilities to include sophisticated eye-tracking equipment which will also allow eye-tracking on mobile devices. The acquisition has put the Unisa HCI research group at the forefront of mobile eye-tracking research internationally – not only in the field of computer science, but also in disciplines such as linguistics, education, psychology and market research."

Progress during 2011 was as follows:

- Eye-tracking data was analysed
- Researchers attended two sessions of Searchlight ODL research writing workshops
- The pilot study was completed
- Results were presented at the ODL research interest group meeting

MAKING SENSE OF THE RUBBER SHEET

Courtesy of its Topology Research Flagship, Unisa has the distinction of being one of the three leading institutions in Africa conducting research in the field of pointfree topology (the other two being the University of Cape Town and the University of KwaZulu-Natal). "However," says team leader Professor Themba Dube, "looking at research outputs, Unisa is unmatched on the continent in terms of pointfree topology research."

Deliberating on the intricacies of topology: (L-R) Prof. Inderasan Naidoo, Dr James Gray, Prof. Tshidibi Batubenge, Prof. Themba Dube (team leader), Prof. Seithuti Moshokoa and Prof. Gugu Moche (Executive Dean: CSET)

Dream team

The flagship, located in CSET's Department of Mathematical Sciences, comprises six dedicated and passionate team members:

- Professor Themba Dube, team leader, whose research interests are pointfree topology and rings of continuous functions
- Professor Gugu Moche, Executive Dean of CSET, whose research interest is topological semigroups
- Professor Inderasan Naidoo, whose research interest is pointfree topology
- Professor Seithuti Moshokoa, whose research interests are classical analysis and general topology
- Professor Tshidibi Batubenge, whose research interests are symplectic geometry and topology of Frolicher spaces
- Dr James Gray, whose research interest is category theory

What is it?

The field of topology is not easy to explain in layman's terms without detracting from its true complexity. Yet the applications of this major field of mathematics are visible in things we all know such as the stately Union Buildings and animated movie Shrek – both architecture and computer-generated imagery have topological underpinnings. "Another well-known area of application is DNA analysis," says Professor Naidoo. "Given that topology covers aspects of space, dimension and transformation, the list of applications linked to this field is endless."

Topology dates back to the 18th century and can be viewed as geometry on steroids: whereas the latter deals with precise geometric shapes (triangles, circles and the like), topology essentially deals with the deformation of forms/objects. Explains Professor Naidoo: "Although a

gross oversimplification, topology is sometimes referred to as 'rubber-sheet geometry' because a rubber sheet can be deformed – stretched, pulled, twisted and so on – to provide new and different forms that will all preserve properties of the imaginary rubber sheet."

The Topology Research Flagship focuses on five topics within this broad field:

- *Classical analysis and general topology*
- *Differential topology and algebraic topology*
- *Pointfree topology*
- *Topological algebraic structures with the main emphasis on topological semigroups*
- *Category theory*

Hosting the best

"Unisa academics are amongst the trailblazers in topology research," says Professor Dube, "and their work attracts world experts to Unisa where, as guests, they share their insights and gain from ours. A case in point is the 2011 visit by Professor Hans-E Porst from the University of Bremen, Germany, one of the most erudite mathematicians in the field of categorical algebra, who discussed with Unisa staff and students recent trends in Hopf Algebras, which are very complicated algebraic structures.

"Multi- and interdisciplinarity is a major priority in the flagship project, and we were also honoured to host mathematician and artist Professor Andrzej Gutek from Tennessee Tech University in the United States, who addressed staff and guests on fractals and numbers in African art, exploring the concept of fractals in the twentieth century, the fractal characteristics in African art and the meaning of numbers in the objects from the Cameroon Grasslands. At a research seminar in September 2011 Professor Ingrid Rewitzky, Executive Head of Mathematics at Stellenbosch University, spoke to students and staff on the use of topology and frame theory in her main area of research, computer science."

Other guests hosted during 2011 included subject specialists from the Democratic Republic of Congo, Namibia and major South African universities.

Training tomorrow's topologists

Building topology capacity in Africa is one of the flagship's main aims, and 2011 saw a number of highlights in this regard. One of these was a seminar to equip master's and doctoral students with one of the most powerful tools for probing topological concepts, namely category theory. Among the speakers at the seminar were National Research Foundation A-rated mathematician, Professor George Janelidze (University of Cape Town), Dr Yuliya Zelenyuk (Wits), Dr Patrice Ntumba (University of Pretoria), and Dr Partha-Pratim Ghosh and Professor Dharmanand Baboolal (both from the University of KwaZulu-Natal).

"In addition to academic exposure," says Professor Dube, "the Topology Flagship trains students in the art of presenting talks at conferences, an essential skill. To this end we presented a postgraduate symposium where research students made presentations to audiences, including other students, members of the department and promoters."

Four PhD students and one postdoctoral student are currently enrolled for studies in topology.

Sharing insights with the international community

During 2011 the flagship's team members produced 14 papers that were published in journals of international renown, including the *Houston Journal of Mathematics, Acta Mathematica Hungarica, Algebra Universalis, Bulletin*

of the Belgian Mathematical Society and *Topology and its Applications*. Professor Naidoo participated in two conferences in the United States, and one each in Croatia, Pakistan, the Czech Republic and Namibia. Professor Dube was an invited speaker at a pointfree topology conference held in June 2011 at the University of Kansas in the United States.

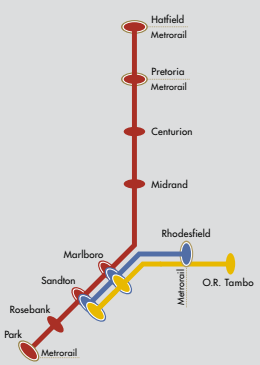
"A major event was the joint South African Mathematical Society/ American Mathematical Society 2011 Congress, held at the Nelson Mandela Metropolitan University," says Professor Dube." Two of our PhD students presented papers at this congress, affording them – and the flagship – invaluable international exposure."

Forthcoming attraction

In 2012 the flagship will be hosting TACT2012, a conference on topology, algebra and category theory. Explains Professor Dube: "The conference is the third in a series of initiatives aimed at providing a platform for African scholars and graduate students in topology, algebra, category theory and related areas, including differential topology and geometry. The conference will include keynote addresses and 20-minute talks by participants from all over Africa and the globe."

Topology in action

Well known to Gautrain commuters, the Gautrain route map is an example of a practical application of topology. An accurate map of the route would have lots of bends and uneven spacing. The simplified map is topologically equivalent to an accurate map. The important information, like the order of stops and how the different train lines are connected, does not change as the map is distorted from one to the other.



FROM TOXICOLOGY TO NANOECOTOXICOLOGY

The terms 'toxicology', 'environmental toxicology' and 'ecotoxicology' are often used interchangeably, even among scientists, yet there are very distinct differences between the meanings of these terms. Professor Fikru Tafesse, a member of CSET's Ecotoxicology Research Flagship Project (led by Professor Jack Mphahlele, Chair of the Department of Chemistry) sheds light on the salient features of each discipline.

"Toxicology," says Professor Tafesse, "has its roots in the earliest human selection of food, avoidance of poisonous animals, and use of poisons on weapons. In the early nineteenth century the Spanish chemist Bonaventura Orfila began the systematic use of test animals and developed methods of chemical analysis to identify poisons in tissue and body fluids. Standard procedures for the investigation of toxic effects of substances soon emerged, and in the first half of the twentieth century development of the pharmacological, processed-food, and industrial-chemical industries increased the pressure for standardised toxicological tests, particularly in the wake of government regulation."

Professor Tafesse explains that the list of the regulated items included chemical compounds of consumer products, metals, cosmetics and the biological effects arising from the administration of chemical compounds, principally to animals, tissues or cells, and also to humans. "Such compounds include industrial chemicals and residues, chemical contaminants, consumer products, drugs, metals, pesticides, food additives, cosmetics and additives to animal feeding stuffs," he says.

Eco-confusion

Environmental toxicology was originally very closely linked to toxicology, as a means of expanding the traditional methods to the new market of environmental concern. This speciality discipline studies the complexities in understanding pollution in the environment, including issues of biological, solar, and mechanical transformations, interactions within the environment, transformations, dilution and accumulation and fates of populations rather

than individuals. "But," warns Professor Tafesse, "the wrongly perceived transformation of environmental toxicology into the equivalent of ecotoxicology is evident among some scientists."

So what, exactly, is ecotoxicology?

"Ecotoxicology can be defined as the study of the adverse effects of chemicals, natural products, and physical agents on populations and communities of species of plants, animals and microorganisms as they occur and are organised in nature," says Professor Tafesse. "In contrast to classical toxicology, which deals predominantly with the toxic effects of chemicals on individual organisms, ecotoxicology is essentially the study of the toxic effects of environmental chemicals on naturally occurring populations in various ecosystems, including humankind. It is, therefore, important to study toxic effects in the context of biologic equilibria; the study of the harmful effects on the various constituents of ecosystems of chemical pollution of the environment for which humans are to a large extent responsible."

Addressing the problem in its totality

Joining efforts, toxicologists and ecologists should not forget to pay attention to the possible consequences for an ecosystem in its totality, says Professor Tafesse. "To this end, models with predictive value should be established and laboratory studies should be complemented as much as possible by field studies on a much larger scale, using data from chemical analysis in a continuous surveillance of the environment in adequately programmed monitoring. Ecotoxicology has its roots in both the sciences of ecology and toxicology, and draws on chemistry, pharmacology, and epidemiology as well. In this respect it is multidisciplinary except that ecology is more a field and systems science than a laboratory and organism one. Ecotoxicology is a multidisciplinary field of study that deals with the environmental effects of natural and synthetic chemicals in the biosphere."

A number of Ecotoxicology Research Flagship team members: (L-R) Mr Martin Enemchukwu (Department of Chemistry lecturer), Mr Kennedy Eguzozie (Department of Chemistry lecturer), Mr Mark Smith (Department of Chemistry lecturer/Co-supervisor of honours students), Ms Marole Maluleka (Laboratory researcher/Honours student), Mr Kgaugelo Tapala (Laboratory researcher/Honours student), Prof. Fikru Tafesse (Department of Chemistry Professor: Inorganic Chemistry), Ms Mosima Monareng (First-year chemistry tutor/Honours student) and Ms Tebogo Khoza (Laboratory Researcher/ Honours student)

The next level

Nanotechnology is a rapidly expanding and advancing field of research that has already yielded a variety of commercially available products including cosmetics, suntan lotions, paints, self-cleaning windows and stain-resistant clothing. According to conservative estimates the number of consumer products on the market containing nanoparticles (NPs) or nanofibres now exceeds 800 and is growing rapidly. The most common nanoparticle material is fullerenes (carbon) followed by silver, silica, titanium dioxide, zinc oxide and cerium oxide.

"Among potential environmental applications of NPs is the remediation of contaminated ground water with nanoscale iron," says Professor Tafesse. "Regarding personal care products, NPs of titanium dioxide and zinc oxide are included in toothpaste, beauty products, sunscreens and textiles. In addition, silver NPs are increasingly used as antimicrobial additives in detergents, food packaging and textiles such as socks and underwear. Due to the increased production of synthetic NPs, the occupational and public exposure to NPs is on the increase. Hence their potential release into the environment is anticipated to increase."

Nanoecotoxicology at Unisa

Ecotoxicological data on NPs are just emerging, says Professor Tafesse. "However, there is a remarkable amount of data and experience on environmental hazard evaluation of bulk chemicals. The challenge and task for nanoecotoxicologists is to analyse this information, critically evaluate and take the significant data and concepts on board, to synthesize new knowledge and approaches based on existing ones (dose–effect data, protocols, QSARs [quantitative structure-activity relationships]) and 'modern' knowledge that evolution of the science has introduced (toxicogenomics, biomarkers). Hence the move from ecotoxicology to nanoecotoxicology. At the Ecotoxicology Research Flagship we are embarking on this initiative."

Projects and other outputs

The Ecotoxicology Research Flagship is currently involved with research that tries to understand the effect of metal ions in the hydrolysis and condensation reactions of phosphate esters, and to this end model studies are being conducted.

In another project a highly selective phosphate sensitive electrode has been developed to aid in the monitoring of phosphates in the environment. "Currently there is no such electrode on the market, and our attempt to produce a solid state phosphate sensitive electrode is a novel undertaking," says Professor Tafesse.

The flagship is also actively providing the scientific and technological leadership our country needs through postgraduate student training: three of its PhD students have wound up their studies and will graduate in 2012.

The high status of the flagship within the scientific community is supported by high-quality research outputs in the form of conference presentations and publications. In 2011, flagship team members published ten papers in peer-reviewed chemistry journals.

RESEARCHING THE FUTURE'S SCARCEST RESOURCE

As a semi-arid country South Africa has limited water resources that need to be protected and managed with great care. The constant reviewing of existing policies and introduction of climate adaptation measures are very important for rural, urban and peri-urban communities, as such measures could inform strategies for water resources management and development.

To assist in finding solutions for South Africa's water problems, water research was identified as one the flagship research projects in CSET. Led by the acting chairperson of Unisa's Department of Civil and Chemical Engineering, Professor Francois Ilunga, the project explores issues in water engineering and related fields. "The emphasis," says Professor Ilunga, "is on finding new solutions to the water crisis, such as recycling/reusing wastewater, water conservation, rainwater harvesting and issues that cover climate change challenges and adaptation."

Expertise across the spectrum

Water research is multidisciplinary in nature as it cuts across many fields,

such as nanotechnology, computer science, social science and law. The Water Research Flagship team comprises talented individuals, each of whom brings different skill sets and experience to the table:

- Professor Francois Ilunga, Acting Chair of the Department of Civil and Chemical Engineering, heads the team
- Dr Itumeleng Molobela (Department of Civil Engineering) has a range of research interests including projects related to water and the environment, microbial biofilm control and removal in the water industry, and biofouling, biocorrosion and biotechnology
- Mr Pramod Sinha (Department of Civil Engineering) gained a great deal of experience in especially the sedimentation of dams and reservoirs during a 20-year career at the Department of Water Affairs.
- Ms Ednah Onyari (Department of Civil Engineering) focuses on integrated sediment management
- Ms Noncembo Mthombeni (Department of Chemical Engineering) researches nanotechnology applications in relation to water purification and other aspects
- Mr Lebea Rakobo (Department of Civil Engineering) is the equipment manager for the new research laboratories

Putting theory into practice

During 2011 the research flagship was involved in the following research projects:

- A joint project with Rand Water and the Council for Scientific and Industrial Research (CSIR) to investigate rainwater harvesting as a solution to current and future water needs. Due to a delay in securing project funding, 2011 saw only costing aspects dealt with, and the first full workshop on this project will be held in 2012.
- A project focusing on sedimentation of reservoirs, a major problem worldwide. The project is run together with an external consultancy and extends to 2014.

The research flagship was also partially involved in a study on the impact of climate on water supply conducted by the Department of Water Affairs. This project will conclude in 2015.

Many disciplines, one goal

A multidisciplinary approach has characterised the flagship's activities since day one. "In May 2011 we hosted a seminar focusing on water and nanotechnology," says Professor Ilunga. "In addition to presentations by team members Mr Sinha and Dr Molobela, Professor Srinivasu Vallabhapurapu of the Department of Physics discussed the findings of his research on the use of magnetic nanomaterials to remove heavy metals such as chromium from wastewater. He also talked about the application of nanomaterials in the electronic industry. Professor Vallabhapurapu concluded his talk by emphasising the need for collaboration, saying that while scientists explore solutions to practical problems such as water purification and energy, engineers are very good at using the knowledge found by scientists to design and construct products to solve the problems with an eye towards optimising costs and efficiency."

Examples of the involvement of other disciplines abound. At the flagship's first seminar in 2010 (shortly after its establishment), Professor Akpofure E Taigbenu, from the School of Civil and Environmental Engineering, University of the Witwatersrand, and Extraordinary Professor in Civil and Chemical Engineering at Unisa, gave a presentation entitled *Integrated modelling in water engineering.* His presentation focused on a quantitative measure of integrating environmental, social, institutional and economic aspects as a way of finding a good balance between water resources and water demands within the South African context.

Speaking at the same event Dr Jean Marc Mwenge Kahinda, a senior researcher at the CSIR and external lecturer at Unisa, gave a presentation entitled *Rainwater harvesting as an adaptation measure to climate change in South Africa.*

Members of the Water Research Flagship team: (L-R) Mr Lebea Rakobo (Department of Civil Engineering), Ms Noncembo Mthombeni (Department of Chemical Engineering), Prof. Francois Ilunga (Acting Chair of the Department of Civil and Chemical Engineering and team leader) and Mr Pramod Sinha (Department of Civil Engineering)

At a further seminar series held in August 2011, Ms Bolanle Ikotun from the department of Civil and Chemical Engineering presented a lecture called *Alkali Silica Reaction (ASR): A concrete defect*. The presentation focused on the deterioration effect of ASR on concrete and the efforts that have been made by different researchers to avert this problem. Cyril Mbatha, an associate professor in the Department of Economics, spoke at length on research he previously conducted on water management areas and the challenges associated with these. He also provided ideas for future research saying that these needed to cross over and also examine the political and geographical aspect of ensuring accessibility to water.

Speaking their minds

Team members were active in terms of conference participation. At the May 2011 seminar, Dr Molobela's presentation focused on the impact of microbial biofilms in the water industry. Her main objective was to introduce the concepts of microbial biofilms and the importance of studying this concept in the water industry where corrosion is one of the major problems and microbial biofilms are the main causative agents. Also speaking at this event Mr Sinha reviewed the current water situation in South Africa and discussed rainwater harvesting and reusing water as ways of dealing with water scarcity.

Youth focus

Engagement with the community and youth is also a major priority for the flagship. During CSET's GirlPower community engagement initiative in Atteridgeville on 16 April 2011, Dr Molobela and Mr Sinha presented sessions on rainwater harvesting. Through their engagement with the learners, they identified Renei Mphaphuli, a female matric learner from Holy Trinity Secondary School, as one of the potential future scientists. As part of her prize, Renei was invited to share the stage with seasoned CSET researchers at a seminar the Water Research Flagship hosted on 29 April 2011.

In her presentation, she highlighted different components of rainwater harvesting, water purification and the various purposes for which this water can be used. "This young girl handled her presentation as confidently as a seasoned academic," says Professor Dube. "Her amazing confidence and bold voice left the audience amazed and with many questions – which she handled insightfully. This youth initiative has been extremely successful, and we look forward to launching further initiatives in 2012. Mr Sinha is mentoring two pupils from Atteridgeville, both girls, on an ongoing basis."

NICHE AREA 4

Economic and environmental sustainability

Environmental sustainability has arguably become one of the most important challenges facing humanity in the 21st century.

Within the field of environmental sustainability there are a number of research issues which can and should be explored within a number of disciplines. In recognition of this challenge, Unisa seeks to strengthen and provide space for disciplines engaged in research into environmental sustainability.

Prof. Leslie Brown

UNDERSTANDING ECOSYSTEMS

The Applied Behavioural Ecology and Ecosystem Research Unit (ABEERU) at the College of Agriculture and Environmental Sciences (CAES) conducts basic and applied research to solve industry-related problems on indigenous wildlife and vegetation in the natural environment as well as the monitoring of their reaction to different management measures.

"The scope of research focuses on the reaction of all components (biotic and abiotic) of ecosystems to changes in the urban and natural environment," says Professor Leslie Brown, the unit's head. "This integrated approach has clear academic and practical value and is in line with Unisa's education philosophy and of the approach followed by the National Research Foundation of establishing and supporting centres of excellence involving interdisciplinary research teams."

The basic knowledge thus gained will be applied to improve management and understanding of ecosystems to ensure sustainability and biodiversity. "We have a task as academics/researchers and as a university to educate and inform people of the effect of our actions and what should be done to manage and conserve these natural resources in a responsible way that will benefit not only us but also future generations," concludes Professor Brown.

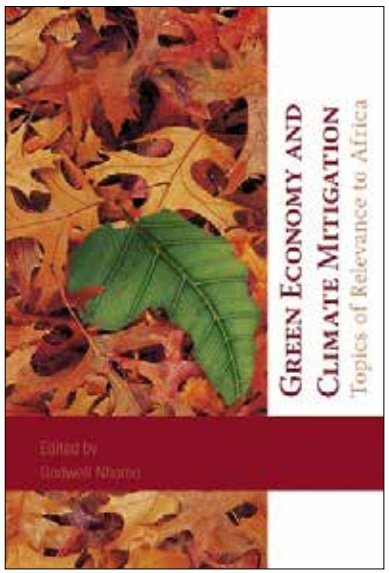
FOSTERING GREEN PARTNERSHIPS

Unisa's School of Environmental Sciences is conducting research into *Water consumption and conservation in the green industry* under the guidance of Professor Jimmy Hendrick, the school's director.

"Green industry partnership is fundamental to Unisa's multi-, inter- and transdisciplinary approach to providing sustainable options for managing environmental challenges with communities," says Professor Hendrick. "Working in teams with various industry partners has also enhanced the synergy of their work by providing different skill sets and perspectives and hence striving to achieve excellence in research."

Prof. Jimmy Hendrick

> *"We have a task as academics/researchers and as a university to educate and inform people of the effect of our actions and what should be done to manage and conserve these natural resources in a responsible way that will benefit not only us but also future generations." – Prof. Leslie Brown*



EXAMINING THE GREEN TRANSITION

Since the global financial meltdown of 2008, the concept of a green economy has rapidly gained attention because of structural flaws in current economic models. As many economies continue struggling to recover, the possibility of a green economy, one that is inextricably linked to global sustainable development while promoting economic growth, is starting to appear attractive.

Joining the growing literature on this topic is a book entitled *Green economy and climate mitigation: topics of relevance to Africa*. Edited by Professor Godwell Nhamo, Programme Manager for the Exxaro Chair in Business and Climate Change, and co-authored by seven Unisa staff members, the book addresses current thinking in the field of sustainable development, the transition to a green global economy and its implications for Africa. The book's 11 chapters address thought-provoking questions and also seek ways in which governments can make a smooth transition to low-carbon-driven economies.

Launched at the 17th Conference of the Parties (*COP17*) to the United Nations Framework Convention on Climate Change (UNFCCC) in Durban in 2011, the book is a contribution to the discourses surrounding climate change by higher education in South Africa.

REDUCING POVERTY THROUGH MACROECONOMICS

Prof. Nicholas Odhiambo

The Growth, Poverty and Policy Modelling (GPPM) Research Flagship in the College of Economic and Management Sciences (CEMS) seeks to investigate the determinants of economic growth in developing countries. Says Professor Nicholas Odhiambo, project leader: "Very few studies have examined the impact of economic growth and its determinants on the ultimate policy goal, i.e. poverty reduction. In fact, it is not clear to date whether the economic growth which has been experienced in many developing countries, is pro-poor or pro-rich."

Using novel empirical models and techniques, this project will address the shortfall by examining empirically the dynamic impact of economic growth and its determinants on poverty reduction in developing countries.

The project achieved the following successes in 2011:

- 35 articles, 1 book, 2 policy briefs and 14 conference papers were published
- The project attracted 17 researchers, of whom five are full professors
- 5 junior staff members were mentored

Prof. Sunette Pienaar-Steyn

MILLENNIUM DEVELOPMENT GOALS – PROFESSOR SUNETTE PIENAAR-STEYN

CEMS's Millennium Development Goals (MDGs) Research Flagship is an interdisciplinary research project aimed at critically examining the gaps and obstacles with regard to achieving MDGs in sub-Saharan Africa. Theme leader for the project is Professor Sunette Pienaar-Steyn, who has published articles and presented papers at national and international conferences on public-private partnerships, multi-stakeholder collaborations, global health partnerships, the millennium development goals and community engagement.

MDGs are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions – income poverty, hunger, disease, lack of adequate shelter, and exclusion – while promoting gender equality, education, and environmental sustainability. Academic contributions to the MDGs are scant and then mostly from first world academic institutions. The rationale of this project is for African academics to contribute to this debate particularly as it impacts on sub-Saharan Africa.

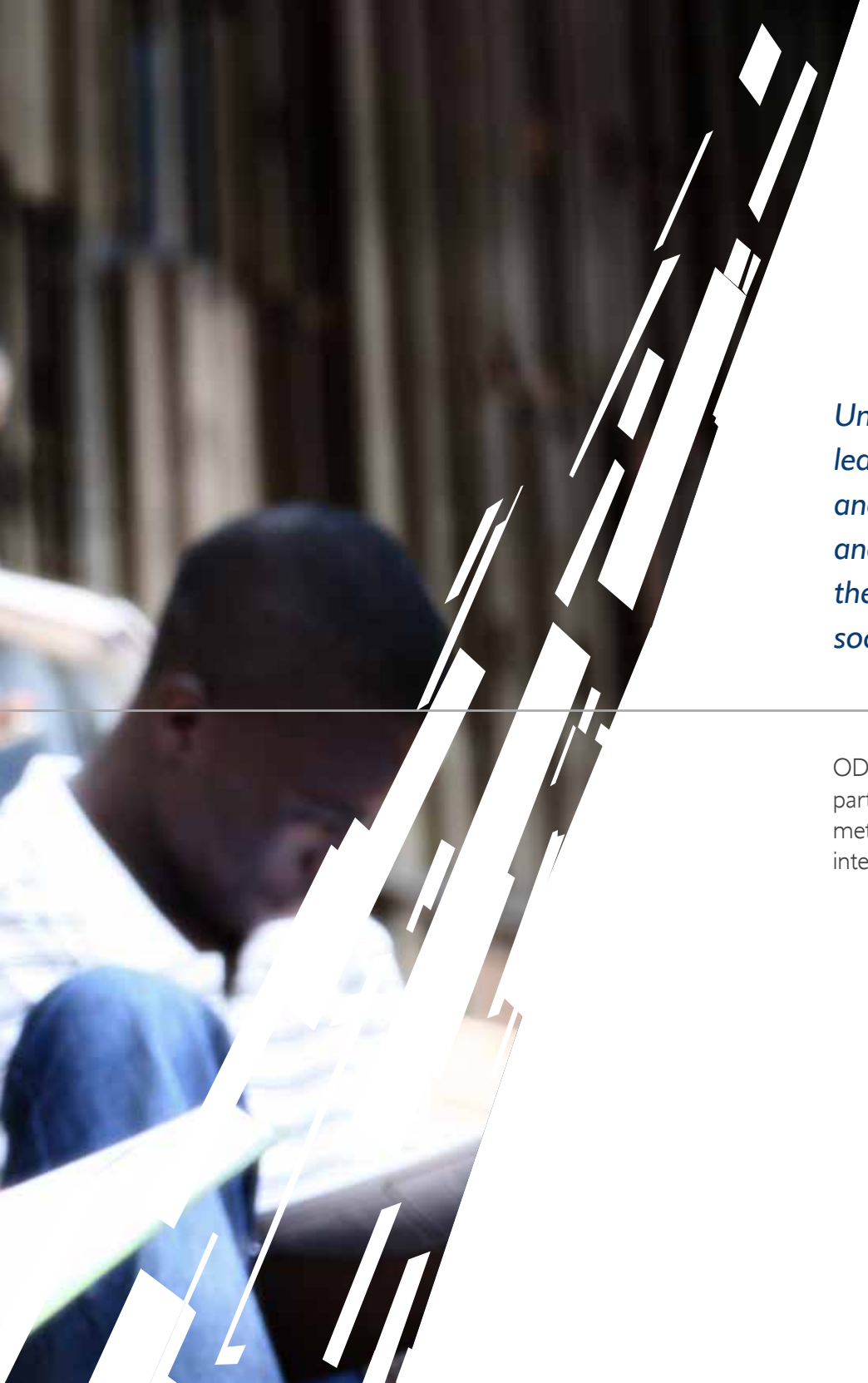
The following key successes were achieved in 2011:

- Mobilising a multidisciplinary research team
- Training five students in research practice and engaging them in a research project
- Establishing an international partnership with ESCEM, one of France's leading business schools
- Involving other stakeholders such as Statistics South Africa and the Development Bank of Southern Africa

"MDGs are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions – income poverty, hunger, disease, lack of adequate shelter, and exclusion."

NICHE AREA 5

Open distance learning



Unisa is the only dedicated open distance learning (ODL) institution in South Africa, and is the largest such institution in Africa and one of the largest in the world. As such, the university is conscious of its important social mandate.

ODL is crucial in advancing the ideal of increasing levels of participation in higher education. For Unisa, research in ODL methods and impact cannot be an optional extra, but is integral to all research efforts in the university.

ODL RESEARCH AT UNISA: ITS CHALLENGES AND POTENTIAL

Through its ODL-related related research Unisa is poised to position the university within the next ten years to be acknowledged as

- **questioning** many of the accepted theoretical models and understandings of ODL
- contributing to **contextualised and critical reflexive** understandings of the complexities and potential of ODL
- **impacting on policy development and implementation** at Unisa, and increasingly in the developed and developing world
- creating **local and global spaces** for sharing good teaching and learning praxis
- establishing a **profound appreciation** for the roles, challenges and opportunities for ODL practitioners who contribute to a more **just, compassionate and sustainable future** for humankind

At a Senate meeting on 14 March 2012, an ODL Research Framework and Plan was approved which will guide ODL research towards achieving this objective. The Framework and Plan describes ODL research excellence and innovation in the context of Unisa as the creation of new knowledge and/or the use of existing knowledge in new and creative ways so as to generate new concepts, methodologies and understandings. ODL research excellence is therefore focused on changing or challenging accepted beliefs, assumptions and practices in ODL teaching and learning or on applying existing research findings to new contexts or in innovative ways that shape and change ODL practice. The quality of ODL research is based on aspects such as the originality of approaches and ideas in solving problems, coherence and cumulative character of the research, contributions made to international developments, publication in national and international peer-reviewed journals and invitations to participate as keynote speakers at national and international conferences, symposiums and forums.

ODL research encompasses disciplinary and multi-, inter- and transdisciplinary (MIT) research with the specific focus on understanding and informing ODL praxis – whether teaching and learning in ODL contexts; issues regarding the design, methodologies and processes in ODL research; student success and student contexts as well as policy and capacity development and implementation.

In order to achieve acknowledgement for excellence and innovation, ODL research has to be seen as an interconnected, multidimensional and integral part of the broader mandate of being an ODL higher education institution. Due to its multi-, inter- and transdisciplinary (MIT) nature; ODL research poses unique challenges to researchers. Despite these challenges, it is essential that ODL research should match the rigour, standards, validity and esteem of discipline- or subject-specific research. ODL research furthermore encompasses the whole student journey in all of its complexity and therefore requires the combined efforts of all ODL practitioners, whether as faculty or as professional staff. Doing research on the phenomenon of ODL in the context of Unisa is a key strategic issue for increasing the effectiveness and quality of teaching and learning, and the delivery of teaching and learning. There is ample international evidence of a correlation between reflexive research into teaching and learning praxis and the effectiveness of teaching and learning.

For the period 2012-2015 ODL research will be coordinated and supported around four central thrusts namely (1) the impact of student support (cognitive, administrative and affective) on student success and retention; (2) assessment in ODL; (3) technology-enhanced teaching and learning and (4) the changing role of faculty in future ODL environments.

Currently there are a number of stakeholders in ODL research such as individual and collaborative research among faculty and professional staff; the Directorate for Institutional Research (DIR); the Bureau for Market Research (BMR) at Unisa and the Institute for Open and Distance Learning (IODL). The latter is mandated to provide leadership, coordination and support in ODL research to Unisa. Although there is increasing interest in doing and supporting ODL research, the time is ripe to provide clear foci, leadership and coordination.

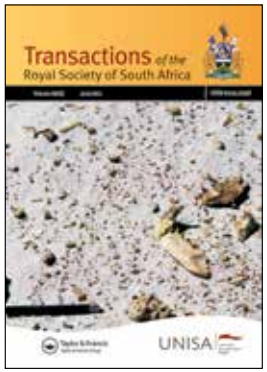
If ODL research at Unisa wants to achieve international acknowledgement and shape teaching and learning praxis, policy development and implementation at Unisa we will need to increase our efforts to provide direction, capacity development and support. Since the approval of the ODL Research Framework and Plan in March 2012, more than 120 Unisa staff from a range of backgrounds registered their interest and commitment to participate in doing research in the four strategic thrusts for the period of 2012-2015. It is foreseen that the number of staff will increase as the different initiatives in ODL research become institutionalised. A number of initiatives will take place during the rest of 2012 to formulate research proposals in different aspects in each focus as well as build capacity and provide support for individuals and teams.

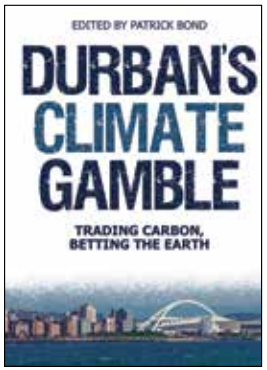
Research and innovation support

Central to Unisa's Research Strategy is the objective of sustaining a supportive, enabling research environment. In this section we look at the 2011 activities of two key players in this regard: Unisa Press and the Unisa Library. We also take a sneak peek at the new science and technology facilities at our Florida campus.

UNISA PRESS

Over the past fifty years, the University of South Africa Press has grown to become one of the largest and most influential university presses within Southern Africa, garnering international academic prestige with an excellent and competitive publishing list in terms of both scope and depth. In recent years it has increasingly positioned itself in the international arena by fostering dynamic collaborative alliances with other international publishers such as Taylor & Francis, Brill, Rozenberg and James Currey Publishers.





The Taylor & Francis-Unisa Press co-publishing agreement continues to produce strong results and multiple benefits. The partnership is contributing to substantial, sustained, and increased investment in systems and capacity building for Unisa Press. The co-publishing programme raises the profile and reach of the journals concerned, and returns substantial government funding grants to the university.

Further benefits of the partnership are as follows:

- Online usage of constant titles doubled each year in the first three years of the co-publishing agreement, then trebled from 2009 to 2010. Usage increased significantly from 2010 to 2011 for both the constant titles and in terms of total usage. This bears testimony to the growing interest our titles continue to generate and the quality of the joint programme.
- Ten of the co-published titles are now listed in ISI/Thomson-Reuters Indexes.
- Full archives of co-published journals have been made available on Unisa Press's online platform through retro-digitising back content to the benefit of subscribers.
- Ten titles now use ScholarOne Manuscripts with four more at the initial stages of implementation. These titles benefit greatly from the assistance this system provides with administration, planning, and reporting for editors, authors, and reviewers.
- Core subscriptions increased substantially and there was higher uptake of the Online Only option in common with all Unisa Press's titles.
- The co-published titles benefited also from inclusion in the Taylor & Francis online sales agreements with libraries globally, as well as through the EBSCO*host* database made available to close to 6,000 institutions, in addition to extensive reach to libraries in developing and emerging countries through generously subsidised initiatives.

Unisa Press is the only university press in South Africa to combine a vigorous books and journals publishing programme with a wide range of subjects. Publishing focus areas are reviewed on a regular basis to tie in with contemporary issues significant to the country and the continent, whilst also being globally relevant.

The current focal point of Unisa Press is to become a leading university press on the African continent and to increase readership and an exchange of academic materials within Africa. Whilst striving towards this mission, authors from across the continent and the rest of the world are being actively recruited, and co-publication and co-distribution partnerships are being explored.

The Press is dedicated to the maintenance of quality assurance, cost-effective standards and professional publishing principles, as benchmarked against international best practices for university presses. The Unisa Senate

Publications Committee is responsible for all policy matters concerning the professional publishing standard and quality of the content of all scientific and some general information publications of Unisa Press. The committee plays an important gate-keeping role in ensuring the quality of all works published under the Unisa Press imprint and in approving policies.

Unisa Press is committed to the promotion of scholarly communication by publishing outstanding research work, scholarly journals and books, as well as textbooks of high academic merit. The Press is devoted to promote the production and dissemination of new knowledge systems and to positioning Unisa Press in the international arena by fostering dynamic collaborative alliances. There is a clear subject-specific focus on the publication of peer-reviewed original research within an African context. This provides a unique platform for local researchers, while simultaneously ensuring global visibility for African scholarship.

BOOKS

24 books were published by Unisa Press in 2011. The titles of the published books are provided below.

Table 11: Books published in 2011

Author(s)/Editor(s)	Title
Bond, P (ed)	Durban's Climate Gamble
Burger, M	Bibliographic Style and Reference Techniques
Chauke, P	U Sola Mani? (Who's to Blame?)
Cornwell, G, Klopper, D & Mackenzie, C	Columbia Guide to South African Literature Since 1945
Crawford, R	Bye the Beloved Country: South Africans in Britain, 1994–2009
Desai, A	Reading Robben Island
Du Preez, N & Luyt, W (eds)	Fundamentals & Developmental Psychology in Youth Corrections, 2nd ed
Du Preez, N & Luyt, W (eds)	Ontwikkelingsielkunde en Fundamentele Jeugkorreksies 2nd ed
Dube, L, Shoko, T & Hayes, S	African Initiatives in Healing Ministry
Edgar, R	KubaBa-khethaisicwangcisosikaThixo (Bulhoek Massacre)
Essof, S & Moshenberg, D	Searching for South Africa: The New Calculus of Dignity
Lucia, C	Music Notation: A South African Guide
Lawrence, P (ed)	Viva! musica
Luyt, W, Jonker, J & Bruyns, H	Eenheidsbestuur en Regsbeginsels in Gevangenisse 3rd edn.
Luyt, W, Jonker, J & Bruyns, H	Unit Management and Legal Principles In Prisons, 3rd ed
Machet, M	Mastering Information Skills for the 21st Century
Matjila, S	Bodibeng jwa Matlhomola
Mohr, P	Economic Indicators 4th ed
Risenga, D	Ku DyelaNyamaMatlukeni (Never Forget Your Roots)
Sebate, P	PhekoyaGole (Charm from far afield)
Setumu, T	His Story is History: Rural Village Future Through the Eyes of a Rural Village Boy

Author(s)/Editor(s)	Title
Shearar, J	Against the World: SA and Human Rights at the UN, 1945–1961
Toni, S	Umntu Akanazibangula
Vandeyar, S	Hyphenated Selves

JOURNALS

In total, 39 academic journals were published by Unisa Press in 2011. The names of the journals and their volumes are provided below.

Table 12: Journals published in 2011 and articles per journal and in total

Journal title	Article count for 2011
Africa Education Review	34
African Historical Review	50
African Journal of Nursing and Midwifery	23
African Journal of Herpetology	15
African Security Review	43
Africanus	23
Agenda	60
Agrekon	24
Commonwealth Youth and Development	12
Communicatio	25
Critical Arts	35
De Arte	18
Economic History of Developing Regions	20
Ecquid Novi	19
Education as Change	31
English Academy Review	24
English Studies in Africa	22
Fundamina	22
Imbizo	33
International Journal of African Renaissance Studies	19
Journal of Literary Studies	28
Journal of Early Christian History	22
Journal for Semitics	24
Language Matters	15
Latin American Report	26
Mousaion	23
Musicus	19
Muziki	21
New Voices in Psychology	32

Journal title	Article count for 2011
Philosophical Papers	21
Politeia	15
Progressio	27
SA Historical Journal	55
SA Journal of Higher Education	105
SA Review of Sociology	29
scrutiny2	9
Slavic Almanac	13
Social Work Practitioner/Researcher	22
Transactions of the Royal Society of SA	29
	Total: 1087

UNISA LIBRARY

NEW DEVELOPMENTS

The Unisa Library experienced exciting developments in 2011, all based on the international standards for distance education libraries, and focused on ensuring equal access to library resources and services to all clients regardless of their location.

The Unisa Library is the first academic library to offer mobile library services to clients who cannot visit the libraries in person. The pilot project, involving two mobile libraries in the North Eastern (Polokwane) and Cape Coastal (Parow) regions, became operational in 2011. Based on the success at this early stage and the reports, a motivation for five additional mobile libraries has been approved this year. The mobile libraries are fully equipped with books, computers and connection satellite facilities for network connection (with over 70 000 online resources), on-board library literacy training as well as trained staff for further information on board.

The Unisa Library is the first academic library to offer mobile library services to clients who cannot visit the libraries in person.

Self-service (using radio-frequency identification [RFID] technologies) became fully operational in 2011 and the statistics indicate a continuous growth in the use of the services. The Unisa Library is the first library on the continent to implement RFID. The intention is to improve client satisfaction by making self-service possible, so that clients are able to issue books themselves and to return books without staff intervention. The implementation will also improve the effectiveness of a number of processes relating to stock management including inventory control and shelf order.

The Unisa Institutional Repository (UnisaIR) has been expanded significantly during 2011 and totals 4 442 items. New collections have been added, among others for ODL and the Unisa inaugural lectures. The items are now also searchable via various major search engines such as Google and harvested by large international databases such as OCLC . The use of and access to the repository has also increased to an average of more than 50 000 item views per month. The repository supports Unisa's research strategy and contributed to the implementation of the Unisa 2015 agenda for transformation by disseminating Unisa's published research outputs in full text. The repository preserves, manages and disseminates locally produced intellectual output and research in electronic format and provides a coherent view of Unisa research outputs. The views and searches registered on the repository reflect the exposure for researchers.

To enhance access to the valuable archival collections of Unisa online, the Strategic Projects Coordinating Committee (SPCC) has approved the motivation for funding to digitise these. Following a comprehensive tender process, SABINET has been elected and appointed and a comprehensive digitisation project commenced in 2011.

The value of the digitised archive will be improved access to archive collections. When the exercise is complete, researchers will no longer need to make the trip to the archives but will be able to access the archive collections online.

The extension of opening hours has increased access to the library for many researchers who can only use the library after hours. The library service, including the research space is available to users till 8 pm. The marketing campaign "8 to 8 @ your library" has been launched and the use of the extended hours has increased.

INFORMATION RESOURCES

With more than three million items, the Unisa Library is the largest and best-endowed academic library in sub-Saharan Africa. Its information

resources include:

- 2 681 920 books
- 441 individual subject databases
- 84 247 individual electronic journal titles
- 3 708 print journal titles
- 50 000 electronic books
- 250 000 microfilms and microfiches
- 34 000 audio-visual resources
- E xtensive SA archival materials
- D aily newspapers

The Unisa Library extended the depth of the e-resource collections on offer by purchasing a number of publishers' archives:

- C ambridge University Press Journals Archive
- E merald Journals Archive
- O xford University Press Journals Archives
- Sage Journal Archive
- Springer Journal Archive

OTHER RESEARCH, TEACHING AND LEARNING SUPPORT

The dedicated research space in the Muckleneuk library was also expanded in terms of facilities, services and operating hours. The use thereof has increased significantly since the opening of the space in 2010. The research space was also visited by many clients during the year under review. A total number of 31 630 clients visited and used the workstations during the year, as compared to 12 238 in 2010, resulting in a 158% increase in the number of researchers who visited the research space.

In collaboration with academics, the library has developed myUnisa departmental websites to provide relevant and customised information in support of research, teaching and learning. These websites have customised subject-specific information for all the academic departments and are updated regularly with relevant information pertaining to information resources budget, information resources ordered and received, and any library-related information. The total number of websites added by end 2011 was 48. This has enhanced the integration of the library and information services and access to information resources to contribute to effective teaching and learning at the university.

Within the Unisa strategy to increase research outputs, the personal librarians offer a subject search service to researchers to enhance the reference and information services. This is done to support them in various activities including research, tuition material and publications. The total number of searches conducted in 2011 was 4 048 compared to 3 823 in 2010, resulting in a 6% increase in the number of subject specific searches in 2011.

The library introduced an onsite courier service point to enhance the service to students in terms of turnaround time, as well as feedback on track and trace queries. During 2011, the library received 7 576 items back and distributed 16 027 items via the courier service. This service has also resulted in a decrease in the loss of library material, which ultimately ensures the availability of materials to clients.

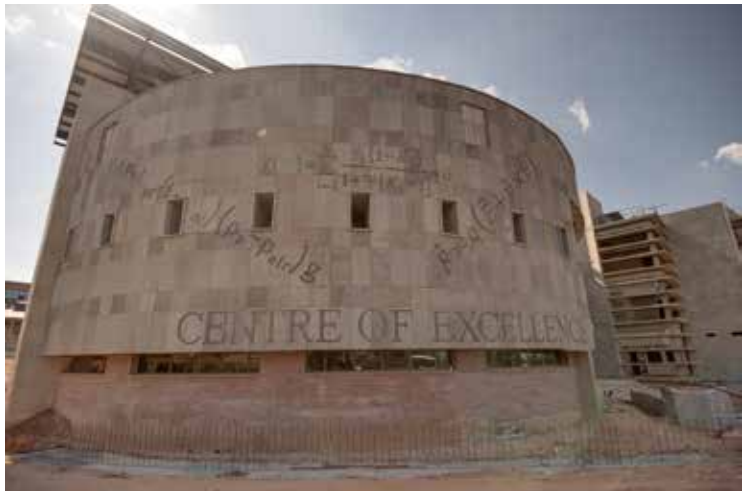
LOOKING TO THE FUTURE: SCIENCE AND TECHNOLOGY GIVEN AN OWN SPACE

As a university with an open distance learning character, Unisa is generally not perceived as an institution offering practical training in the sciences. To address structural and infrastructural deficiencies that limit its capabilities in this regard, Unisa has embarked on a major construction project at its Florida campus.

Nearing completion in 2011 and set to open in 2012, Unisa's new stateof-the art science and technology facilities are set to provide staff and students , especially those in the natural and applied sciences, with the best possible facilities while at the same time drawing postgraduate researchers from all over the country.

The development will provide scholarly spaces for staff and students, with the College of Agriculture and Environmental Sciences and the College of Science, Engineering and Technology to benefit from a new reception area, horticulture greenhouses, an engineering building and a main laboratory building.

Total expenditure on this project amounts to R620 million, and by the end of 2011 around 52% of the construction had been completed. We look forward to reporting on this magnificent project in greater detail in the next issue of Research and Innovation @ Unisa.



Visual impact: Facade of the Centre of Excellence

Almost there: Horticulture greenhouses and laboratories

Opening soon: Spacious laboratory areas

Construction is proceeding apace

Scholarly spaces for staff and students

Tranquil outdoor areas

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