Research and Innovation @ Unisa



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Message from Professor Mandla Makhanya, Principal and Vice-Chancellor

The National Planning Commission has articulated an inspiring vision statement for South Africa. Contained within the National Development Plan, and the document titled *Our future – Make it work*, the vision statement occupies no less than 12 pages and uses poetic and emotive language designed to rally support, and to inspire and motivate the nation to strive toward a common goal.

We all know how important it is to have a vision – it unifies the collective, it provides direction and it assists us in making sense of what it is we do from day to day.

By fostering an environment where great minds have the scope and freedom in which to fully express themselves, where budding entrepreneurs have the support to turn ideas into businesses, and through which innovators can introduce their innovations to the world, we are contributing to the achievement of both our national vision and our institutional vision. But even more importantly, we are reminding individuals that they are entitled to dream, that their ideas can grow wings and that they have access to an enabling environment for achieving their personal vision. It is important to us that this privilege and invitation are extended not only to our academic staff, but also to our professional and administrative staff. The portfolio has a further role to play in connecting all the relevant stakeholders to ensure relevance and optimise the collective energy of like-minded people and institutions. With its high profile on the continent and the reach enabled through open distance learning, Unisa carries much weight in this role. The portfolio's success in this regard is evident in the pages that follow. This document is also a testament to Unisa's efforts to empower researchers in designated groups, as the

volume of work emanating from black and female researchers, for example, continues to grow.

Along with relevance, quality remains at the core of our research efforts. Research quality is not only measured by the feedback of one's peers in academia, but increasingly by awards as well as programmes that seek to uncover and promote ground-breaking and meaningful outputs by the best of the best. Just two examples are the National Science and Technology Forum-BHP Billiton Awards and the South African Women in Science Awards, where our researchers have been represented in the past. We look forward to seeing an even greater representation by Unisa researchers in these programmes in the future.

It is encouraging to see the efforts undertaken by the portfolio to benchmark against similar institutions globally and seek to identify good practices that can be introduced back home. In doing so we find ways to learn from, and add our own learning to the discourse on overcoming research and innovation challenges common to developing countries.

It is my pleasure to once again provide a foreword to the publication that documents the activities and achievements of this portfolio. It is clear that through the institution's investment in terms of resources and infrastructure, sound leadership and an innovative approach to the tasks at hand, the portfolio will continue to grow from strength to strength. I would like to take this opportunity to congratulate the Vice-Principal: Research and Innovation, Professor Mamokgethi Phakeng, and her highly professional team on the work they have done to raise the profile and the volume and quality of published works and research outputs of the portfolio in 2012.



Message from Professor Mamokgethi Phakeng, Vice-Principal: Research and Innovation

Unisa places a particular emphasis on research and scholarship for the creation of knowledge, its application towards cultural, social and economic development and as a core principle of higher education. We regard fundamental research as the important foundation for interdisciplinarity as well as cross-disciplinary programmes that tackle national and global challenges.

Our responsibility as the Research and Innovation portfolio is to create an environment that enables researchers to achieve their ambitions and attracts the most talented academics and postgraduate students. We are also conscious of Unisa's responsibility to identify and address issues facing South Africa and the rest of the continent by working with the public sector, industry and non-government organisations.

Research at Unisa spans a wide range of disciplines and applications. As a university we have a unique strength in humanities and social sciences that contributes to social cohesion through a deep understanding of spirituality, indigenous knowledge, history, identity and culture. That said we also have excellent scholarship in the natural and physical sciences which is recognised internationally for its originality, significance and rigour.

Unisa has placed a particular emphasis on science, engineering and technology, in areas such as nanotechnology, ecotoxicology, renewable energy, superconductivity technology and topology. In 2013, the construction of laboratories on the Unisa Science Campus will be

completed and the laboratories equipped. This will create a comprehensive hub of research activity for our scientists and their students.

This is an exciting time to be a part of the research and innovation community at Unisa.

This annual report demonstrates the remarkable reach and depth of the research and creative interests of our staff and the exceptional quality of their results. While research involves 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. This report thus also provides facts and figures about our research productivity in 2012. 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.

The contents of this report show that 2012 has been a year of progress for research and innovation at Unisa amid the travails of the implementation of ten new support programmes for researchers. I would like to salute all those who labour in the plantation of our research enterprise – academics, students, laboratory technicians and research administrative staff, as well as support staff in human resources, finance, and information and communication technology – for their indomitable spirit as well as for the many successes it brought forth.



Message from Professor Les Labuschagne, Executive Director: Research

2012 was a landmark year for research and innovation at Unisa. Following on from the new Research and Innovation (R&I) Strategy that was developed in late 2011, a new course was charted. One of the main drivers of this strategy as per the Unisa 2015 Strategic Plan was to "[p]romote research, increase capacity and productivity aligned with national priorities for knowledge development".

This ambition links to the National Development Plan 2030 that was developed by the National Planning Commission. While the plan addresses several issues of national importance, it also provides a very specific mandate to higher education institutions that includes increasing the percentage of PhD-qualified staff in the higher education sector, doubling the number of graduate and postgraduate scientists and increasing the number of African and women postgraduates.

As Unisa is one of the main role players in the higher education environment, we have the opportunity to make a direct contribution in support of this journey that South Africa has embarked upon. This exemplifies the university's commitment to its vision of becoming *the* African university in the service of humanity.

As can be seen from the objectives above, the underlying theme is the development of a new generation of researchers. During the year, several initiatives were introduced that would create this enabling environment. This ranged from the creation and revision of several research and innovation policies, the creation and operationalisation of a number of research support

programmes aimed at researchers in the different stages of the pipeline, support structures for early-career researchers to find traction, support structures for professional and administrative staff who want to contribute to the research and innovation goals and targets of Unisa, a variety of development initiatives as well as support for established researchers to reach even greater heights. These initiatives have already yielded dividends as is evident in this report. This would not have been possible without a committed team that took ownership of the R&I Strategy.

Not only does Unisa provide support for the upstream activities, it also contributes significantly to the dissemination of research and scholarly work through Unisa Press, which plays a crucial role not just for Unisa researchers but for the broader research community by providing a platform to publish scholarly work. To ensure that they stay at the forefront of academic publishing, investigations have commenced with regard to open access initiatives and a greater focus on environmental sustainability.

The newly established Directorate of Innovation and Technology Transfer has started finding traction, and we are proud to report that in 2012, Unisa filed its first patent application.

Unisa is committed to playing an even bigger role in the research and innovation space in South Africa. Our medium- and long-term strategies and investments will support this commitment and we also look forward to an increasing level of participation from the current and prospective research community within Unisa.



Research dashboard

Research accolades and notable memberships

External research accolades and notable memberships Internal research accolades

Research outputs

Research publication outputs

Master's and doctoral outputs

National Research Foundation rating and evaluation

An accurate way of assessing the research landscape at any institution is to look at accolades, outputs and prominent programmes as presented in this research dashboard.

Research accolades 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 memberships of prestigious organisations.

External awards 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 highlights experienced during the year under review.

EXTERNAL RESEARCH ACCOLADES AND NOTABLE MEMBERSHIPS

In 2012 a number of Unisa researchers received prestigious awards from and memberships 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.



Prof. Eleanor Lemmer

Education Association of South Africa (EASA) Research Medal

Professor Eleanor Lemmer from Unisa's Educational Foundations Department in the College of Education received the prestigious Education Association of South Africa's (EASA) Research Medal in 2012.

She was acknowledged for her noteworthy contributions to education and outstanding service to the association. "You are an outstanding example of a researcher who meets all the criteria stipulated in the call for nominations. Thank you for the outstanding contributions that you

have made to education in South Africa and for how you promoted the prestige of education, both here and abroad," said the EASA inter-university selection committee.

Professor Lemmer has had a distinguished academic career at Unisa spanning over 26 years. She served as the Vice-Dean in the former Faculty of Education at Unisa and was the first woman to occupy this position. In 2010 she was appointed one of the first Research Professors at the university on the basis of her category C National Research Foundation (NRF) rating, postgraduate supervision and contributions as a mentor.

Her main research specialisation in the last 15 years has been parent involvement in schools and in this area she has produced 13 articles (seven co-authored with co-specialist, now Professor Emeritus, Noleen van Wyk) as well as a co-authored book, *Organising parent involvement in South African schools*.



Prof. Christo Lombaard

Krister Stendahl Medal in Biblical Studies

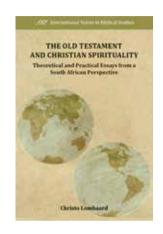
Published in 2012, The Old Testament and Christian Spirituality: Theoretical and practical essays from a South African perspective, has greatly advanced the discipline Christian Spirituality at Unisa and further afield

The publication resulted in the awarding of the prestigious Krister Stendahl Medal in Biblical Studies to Professor Christo Lombaard, Discipline Leader for Christian Spirituality in the College of Human Sciences, for his outstanding scholarship in the emerging field of Biblical Spirituality.

The Krister Stendahl Medal, which was established by the Graduate Theological Foundation in honour of the late Dean of the Harvard Divinity School, is a celebrated international award. Past recipients include Reverend Professor John Barton of Oriel College, University of Oxford; and Rabbi Dr David Aaron of Hebrew Union College-Jewish Institute of Religion.

"The profile of the book has been lifted by the prize," Lombaard says, "and interesting invitations for guest presentations have followed. The book is also read more widely now, and hopefully the scholarship will be taken further by others. That is after all the purpose of research – to advance understanding.

"The award has been good for both the discipline of Spirituality, which is a young discipline, and for Biblical Spirituality, which has thus far been a minor field. But it is a discipline that has been growing steadily



over the past decade, with new appointments and new chairs being created at universities around the world, because this is a field that has so much to offer to the wider theological and humanities enterprises."

President of the Graduate Theological Foundation, Dr Kendra Clayton, said Professor Lombaard was chosen from a pool of many nominees to receive this honour based on his contribution to the "deepening understanding of the relationship between the Jewish scriptures and Christian spirituality", particularly as reflected in his latest published work of scholarship, *The Old Testament and Christian Spirituality, Theoretical and Practical Essays from a South African Perspective.*





Prof. Malose Mphahlele

Academy of Sciences of South Africa (ASSAf) membership

In 2012, Professor Malose Mphahlele, Chair of Unisa's Chemistry Department, was awarded membership of the Academy of Science for South Africa (ASSAf), an independent statutory body of eminent South African scholars and scientists.

As the official national science academy, ASSAf has as its core function the election of the country's most outstanding scholars to membership. These scholars are drawn from the full spectrum of disciplines. The key objective of ASSAf is to promote and apply

scientific thinking in the service of society. Among other objectives, 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.

Looking at the body of Professor Mphahlele's research, it comes as no surprise that he was acknowledged by the academy. With a National Research Foundation (NRF) C2 rating, his current and future research is directed towards physical organic chemistry (synthetic, structural, mechanistic) and bioorganic chemistry research. His work is characterised by a deep appreciation of mechanism and reactivity and is driven by the gaps and limitations in our arsenal of methods to construct novel molecules.

Other Unisa academics who received membership in 2012 were Professors Jane Carruthers and Alan Weinberg. They join Professors Narend Baijnath, Mamokgethi Phakeng and Catherine Odora-Hoppers who were awarded membership to this prestigious organisation in previous years.

Hiddingh-Currie Award

Unisa alumnus Dr Jeremy Shearar's retirement has been a journey very different to most retirement stories, having led him to new ventures and an award-winning book. Based on his doctoral thesis, the book, *Against the World: South Africa and Human Rights at the United Nations 1945-1961*, was meant to be a post-retirement activity to keep Shearar's mind busy, but this activity secured him the 2012/2013 Hiddingh-Currie Award for Academic Excellence.



Dr Jeremy Shearar



The prestigious award, presented annually by Unisa Press to one of more of the international array of authors whose publications it facilitates, aims to encourage and nourish specialised skills in academic research and scholarly publishing. Entries are judged by the academic or artistic nature of the content which has to contribute to the understanding or development of a discipline, and the work should address a specific need or problem in society.

Shearar says that after his retirement in 1994 he undertook to prepare an English version of a book on the history of the Department of Foreign (formerly External) Affairs, now known as

the Department of International Relations and Cooperation. When the book was finished and his role completed, his son advised him to study to keep him occupied.

The choice of where to study was easy – after all, Unisa has 140 years of shaping the futures of students of all ages through its open distance learning mode. After taking the advice of certain faculty members, it was agreed that Shearar might turn his hand to academic matters once more. In his thesis Shearar tried to uncover the objective reasons for highly intelligent men to act the way they did and more or less defy international opinion.

He received from Unisa a Doctor of Laws (LLD) degree on 12 June 2007. "I had originally intended to cover the full period until the change of government in 1994, but the wealth of material available, despite the difficulties I refer to in the introduction, persuaded me to limit myself to the very early years and leave it to others to take up the torch."

INTERNAL RESEARCH ACCOLADES

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 researchenabling 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

This award is targeted at young and developing researchers (not older than 35 years) or groups who have achieved academic research excellence of the highest quality as published in the preceding two years. The research cohort comprises of scholars who are generally in the minority throughout the national higher education system.



Principal's Award for Excellence in Research is, standing, Kunofiwa Tsaurai (College of Economic and Management Sciences), Dr Babatunde Fagbayibo (College of Law) and Prof. Zenghui Wang (College of Science, Engineering and Technology) and seated, Dr Puleng Segalo (College of Human Sciences). Absent is Prof. Philip Stoop (College of Law).



Kunofiwa Tsaurai

Awardee Spotlight: Kunofiwa Tsaurai

Kunofiwa Tsaurai, senior lecturer in Unisa's department of Finance, Risk Management and Banking in the College of Economic and Management Sciences, was one of the recipients of the 2012 Principal's Award for Excellence in Research.

In 2012, Tsaurai, who holds a Master of Science Degree in Banking and Financial Services (from the National University of Science and Technology, Zimbabwe), conducted research on the causality relationship between stock market

development and economic growth, causality relationship between foreign direct investment and economic growth, and causality relationship between exports and economic growth in Zimbabwe.

"The reason I chose research projects on causality relationships between finance and economic variables," says Tsaurai, "is that there is a strong positive relationship between financial market development and economic growth. Well-developed and well-maintained financial markets play an important role in contributing to the health and efficiency of an economy. The results from studies such as mine provide a solid foundation for policy formulation that addresses these aspects.

"I am passionate about conducting Zimbabwe-linked research because Zimbabwe is at a stage where it is economically and financially trying to seek a new direction. The new financial and economic path can only be achieved through crafting and implementing a research-based policy mix. I believe it is my responsibility as a researcher to take a lead in such projects which can have a significant positive impact not only in Zimbabwe but on the African continent as a whole."

Tsaurai believes Unisa is moving in the right research direction implementing research policies and vital support. "I believe Unisa, given its huge library of resources and continuous investment in research, is strategically positioned to become a leader in new knowledge production," he says.

Innovation Award

The difference between a small, unknown university and a big-league university, such as the Massachusetts Institute of Technology (MIT), the California Institute of Technology (Caltech), Harvard University, the University of Cambridge and Princeton University, is innovation, something Unisa's executive management is committed to building and sustaining. 2012 saw the introduction of the Innovation Award in recognition of researchers whose work spoke most to innovation within their field and the university in general.



A dynamic team won the 2012 Innovation Award after being responsible for filing Unisa's first patent since the establishment of the Research and Innovation Portfolio. Winners Prof. Wei Hua Ho (College of Science, Engineering and Technology) and Prof. Srinivasu Vallabhapurapu (College of Science, Engineering and Technology) are flanked by Prof. Mandla Makhanya (Principal and Vice-Chancellor) and Prof. Mamokgethi Phakeng (Vice-Principal: Research and Innovation).



Prof. Wei Hua Ho

Awardee Spotlight: Professor Wei Hua Ho

Professor Wei Hua Ho from Unisa's Mechanical and Industrial Engineering Department in the College of Science, Engineering and Technology was one of the recipients of the 2012 Unisa Innovation Award.

In 2012, together with Professor Srinivasu Vallabhapurapu, incumbent of the newly established Unisa Research Chair in Superconductivity Technology, and Professor Ivan Hofsajer from the University of Witwatersrand, Professor Ho was involved in the filing of Unisa's first

patent relating to a method and apparatus for treating a fluid.

Explaining the invention in more detail, Ho says it involves a novel method in the use of magnetic nanoparticles that are coated with a functional layer – a layer of materials to perform the task required, in this case to remove certain contaminants from water. "The use of magnetic nanoparticles is not novel," he says, "but the novelty in our invention is the way in which the cleaning takes place. Most current systems use the magnetic property to separate the particles from the water after the purification is done. However, our idea is to use the magnetic property in the cleaning phase as well."

The purification process, says Ho, uses a chemical reaction and therefore some kind of physical excitation of the particles within the water is required. "Usually excitation of the container or the water (through the use of a stirrer or similar devices) is used. Our invention shows that a moving magnetic field can achieve the same effect."

Speaking on the importance of this, Professor Ho says that if the invention and method can be extended to a larger commercial scale, the main advantage comes from two factors. "Firstly because there are no moving parts (as opposed to physically stirring or shaking the container), there is little to no wear-and-tear issues thus dramatically reducing the need for maintenance. Secondly because we are only exciting the particles and not the water or container, the energy required could be greatly reduced."

Women in Research Awards

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

This 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 fields as achievers and participating in community and/or industry engagement.



Receiving the Leadership in Research Women Award were back, Prof. Breggie van der Poll (College of Economic and Management Sciences), Prof. Ilsa Basson (College of Science, Engineering and Technology), Prof. Ruth de Villiers (College of Science, Engineering and Technology) and Prof. Valerie Ehlers (College of Human Sciences), and front, Prof. Corinne Meier (College of Education), Prof. Lindiwe Zungu (College of Human Sciences), Prof. Melodie Slabbert (College of Law), and Prof. Agata Krzychylkiewicz (College of Human Sciences). Absent is Prof. Trudie Steyn (College of Education).

Awardee spotlight: Professor Trudie Steyn

2012 has been a year of recognition and affirmation for Professor Trudie Steyn, of the College of Education, after being awarded both a Chancellor's Award for Excellence in Research and a Research Leadership Award.

As a research professor in Educational Leadership and Management, the overarching substantive area of Steyn's research and scholarship has been that of professional working life. Within this broad area she has focused her research on professional



Prof. Trudie Steyn

education contexts, particularly on the working lives of two categories of education professionals: school principals and teachers, and academics. More specifically, her work is located within several narrower recognised substantive areas of educational research, including educational leadership and management, professionalisation and professional development. She is a member of the editorial board of South African Journal of Education, Journal of Educational Studies and Journal of Invitational Theory and Practice.

In addition to producing accredited research outputs, Professor Steyn is responsible for supervising master's and doctoral students.

Commenting on the award, Professor Steyn said that there is no shortcut to becoming successful. "To be a successful academic implies that rejections and failures should be viewed as learning experiences. Quality and constant improvement are crucial aspects to being successful."

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:



Recipients of the 2012 Developing Researcher Award were, back, Dr Mpine Makoe (College of Graduate Studies), Ednah Onyari (College of Science, Engineering and Technology), Jo-Ansie van Wyk (College of Human Sciences) and Gwenneth Miller (College of Human Sciences), and front, Dr Tintswalo Manyike (College of Education), Dr Elizabeth du Plessis (College of Education), Dr Velisiwe Gasa (College of Education), Bernadine Benson (College of Law).

- 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

Awardee spotlight: Dr Velisiwe Gasa

Dr Velisiwe Gasa, from the Department of Inclusive Education in the College of Education, was one of the worthy recipients of the 2012 Women Developing Research Award. She received the award for her research contributions in the last two years.

Gasa has built an excellent academic record and has gained extraordinary recognition among her peers, testing her research findings at national and international gatherings. She serves on the editorial boards of prestigious peer-reviewed academic journals and has been involved in sustained peer-reviewed journal articles. Her field of specialisation is socio- and inclusive education, and other research interests include diversity and gender studies, rural education, youth risk behaviour, life orientation, career path guidance and incarcerated students.



Recipients of the 2012 Women Resilience in Research were Prof. Keshnee Padayachee (College of Science, Engineering and Technology) and Dr Danisile Ntuli (College of Human Sciences).

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.

Awardee spotlight: Dr Danisile Ntuli

Dr Danisile Ntuli, of the College of Human Sciences, is a champion

of children's literature and for the literature battles she fights was one of the recipients of Unisa's 2012 Women Resilience in Research Award. Her research is about the value of children's books written in the indigenous South African languages. It investigates subgenres of both traditional oral art and contemporary indigenous written children's literature with special reference to children's literature in Zulu.

Ntuli believes her research is of particular value because it has enabled her to disseminate knowledge on the importance of introducing to African children from a tender age, age-appropriate books written in their home language so as to inculcate a culture of reading.

Youngest Doctoral Graduate for 2012

As the name suggests, this award goes to the youngest female staff member who obtained her PhD during the preceding year.

Attaining any qualification takes time, but for Dr Marlene Wethmar-Lemmer from the Department of Jurisprudence in the College of Law, 31 was the best age at which to complete her LLD (Private and International Law). This earned her the Unisa Women Youngest Doctoral Graduate award.



Dr Marlene Wethmar-Lemmer

She credits Unisa for its fruitful environment for conducting research which aided her in this achievement. "Being involved in international research projects provides great impetus to one's research," says Wethmar-Lemmer. "The most effective way of completing a doctoral degree successfully is being involved with one's research on a continuous basis and not losing momentum by interrupting one's research for prolonged periods."



Research outputs

While research involves 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.

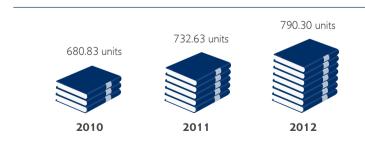
RESEARCH OUTPUTS

Research publication outputs

Research publication outputs have shown a steady growth from 2010 to 2012. Articles in accredited journals grew from 680.83 units in 2010 to 732.63 units in 2011 – a growth of 51.80 units.

2012 yielded an even greater growth in units submitted to The Department of Higher Education and Training (DHET). The total number of units submitted for articles in accredited journals for 2012 was 790.30 units.

Figure 1: Publication outputs 2010-2012



A total of 5 books, 59 chapters in books and 119 papers in peer-reviewed conference proceedings were submitted to the DHET in 2010. In 2011 a total of 9 books, 50 chapters in books and 158 papers in peer-reviewed conference proceedings were submitted. The number of publications in books/chapters in books and peer-reviewed conference proceedings also reflects a steady growth. The submission of 2012 included 13 books, 127 chapters in books and 163 papers in peer-reviewed conference proceedings.

Master's and doctoral 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.

Table 1: Master's and doctoral completion rates, 2011 to 2012

COLLEGE AND LEVEL	2011	2012
College of Agriculture and Environmental Sciences	9	17
Doctoral degrees	4	4
Master's degrees	5	13
College of Economic and Management Sciences	280	289
Doctoral degrees	13	11
Master's degrees	267	278

COLLEGE AND LEVEL	2011	2012
College of Education	45	32
Doctoral degrees	13	14
Master's degrees	32	18
College of Human Sciences	103	95
Doctoral degrees	33	22
Master's degrees	70	73
College of Law	32	55
Doctoral degrees	6	6
Master's degrees	26	49
College of Science, Engineering and Technology	13	11
Doctoral degrees	2	2
Master's degrees	11	9
Total for Unisa	482	499
Doctoral degrees	71	59
Masters degrees	411	440

National Research Foundation rating 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 researchers' standing in relation to other researchers in their disciplines.

There are six 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:
 - o produced a body of quality work, the core of which has coherence and attests to ongoing engagement with the field
 - o 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.

L rating: Awarded to persons (normally younger than 55 years)
who were previously established as researchers or who previously
demonstrated potential through their own research products, and
who are considered capable of fully establishing or re-establishing
themselves as researchers within a five-year period after evaluation.

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

In 2012, a total of 29 academics were newly rated or re-rated, or joined Unisa with ratings, as indicated in the table below.

Table 2: NRF ratings for 2012

NAME	COLLEGE	RATING	STATUS
Dr Ambali Saka Abdulkareem	College of Science, Engineering and Technology (Department of Civil & Chemical Engineering)	Y2	Newly rated
Prof. Rachel Barker	College of Human Sciences (Department of Communication Science)	C2	Newly rated
Prof. Moritz Braun	College of Science, Engineering and Technology (Department of Physics)	C2	Re-rated
Dr Mokhotjwa Simon Dhlamini	College of Science, Engineering and Technology (Department of Physics)	Y2	Newly rated
Prof. Marietjie Frick	College of Science, Engineering and Technology (Department of Mathematical Sciences)	B2	Re-rated
Prof. Yorick Hardy	College of Science, Engineering and Technology (Department of Mathematical Sciences)	Y2	Joined with rating
Prof. André Carl Horn	College of Agriculture and Environmental Sciences (Department of Geography)	C2	Joined with rating
Prof. Marisa Keuris	of. Marisa Keuris College of Human Sciences (Department of Afrikaans and Theory of Literature)		Newly rated
Prof. Elmarie Kritzinger College of Science, Engineering and Technology (School of Computing)		Y2	Newly rated
Prof. Lessing Labuschagne	Professional and administrative research group	C2	Re-rated
Prof. Magdel Le Roux	College of Human Sciences (Department of Biblical and Ancient Studies)	C2	Newly rated
Prof. Hugo Hendrik Lotriet	College of Science, Engineering and Technology (School of Computing)	C3	Newly rated
Prof. Tinyiko Samuel Maluleke	Professional and administrative research group	В3	Newly rated

NAME	COLLEGE	RATING	STATUS	
Prof. Paul Tshepo Matjila	College of Agriculture and Environmental Sciences (Department of Life and Consumer Sciences)	Y2	Joined with rating	
Prof. Vusumuzi Sithembiso Mncube	College of Education (Department of Educational Leadership & Management)	L	Joined with rating	
Prof. Malose Jack Mphahlele	College of Science, Engineering and Technology (Department of Chemistry)	C2	Re-evaluation (special)	
Prof. Patrick Ngulube	College of Graduate Studies (Department of Interdisciplinary Research)	C2	Re-rated	
Prof. Hester Nienaber	College of Economic and Management Sciences (Department of Business Management)	C3	Newly rated	
Prof. Mamokgethi Phakeng	Professional and administrative research group	B2	Re-rated	
Dr Johannes Jacobus Rossouw	College of Economic and Management Sciences (Department of Economics)	C2	Joined with rating	
Prof. Alastair David Smith	College of Law (Department of Mercantile Law)	C2	Re-rated	
Prof. Izak Jacobus Johannes Spangenberg	College of Human Sciences (Department of Biblical and Ancient Studies)	C2	Re-rated	
Prof. Vijaya Srinivasu Vallabhapurapu	College of Science, Engineering and Technology (Department of Physics)	C2	Newly rated	
Dr Susan Antoinette van Aardt	College of Science, Engineering and Technology (Department of Mathematical Sciences)	C2	Newly rated	
Prof. Hendrina van den Bergh	College of Law (Department of Jurisprudence)	В3	Re-rated	
Prof. Micheal Moos van Wyk	College of Education (Department of Curriculum and Instructional Studies)	C3	Joined with rating	
Prof. Zenghui Wang	College of Science, Engineering and Technology (Department of Electrical and Mining Engineering)	Y2	Newly rated	
Prof. Jacobus Stephanus Wessels	College of Economic and Management Sciences (Department of Public Administration)	C2	Re-rated	
Prof. Wilhelm Joseph Wessels	College of Human Sciences (Department of Biblical and Ancient Studies)	C2	Newly rated	

The rated researchers in the list above joined many other Unisa academics who hold NRF ratings. At the end of 2012 Unisa had 109 NRF-rated researchers, slightly down from 2011 due to staff turnover. The table below indicates the increase in NRF-rated researchers from 2005 to 2012. The table also provides a breakdown per NRF category.

Table 3: NRF-rated researchers 2005 to 2012

NRF								
CATEGORIES	2012	2011	2010	2009	2008	2007	2006	2005
А	1	1						
В	9	11	12	14	10	8	5	3
С	86	91	90	72	46	33	27	12
Υ	11	9	7	5	3	1	3	1
L	2	3	4	6	5	5	1	2
TOTAL	109	115	113	97	64	47	36	18

NRF-rated researcher profile: Professor André C Horn

André C Horn joined the Department of Geography at Unisa as a full professor in mid-2012 after previously serving at Vista University and the University of Pretoria. He is a human geographer and his specific interests are in the fields of urban social geography, urban crime patterns, school desegregation, land history and reform. The combined academic and applied approach resulted in commissions to, and participation with, various public and research institutions.

Professor Horn has a C2 rating from the National Research Foundation and has published more than 25 scientific articles and chapters in books, and presented more than 20 papers at international conferences. He was a member of the steering committee of the Urban Commission of the International Geographical Union from 2000 to 2012 and has been a member of the International Geographical Union (IGU) Megacity Task Force since 2002. The mission of the task force is to apply geographic expertise to problems of megacities and to the theory underlying the principles, knowledge, and methods employed in solving megacity problems.



Prof. André Horn

The task force focuses primarily on issues of continental and global scale, and on the restructuring of urban life over the long term, with particular reference to global change in environmental systems and the globalisation of economy, politics, and society. It works in collaboration with relevant international scientific unions and with relevant IGU commissions and study groups.

At present Professor Horn is focussing on postgraduate supervision and his own research that includes drafting a scholarly book.



Research programmes

The Master's and Doctoral Support Programme (MDSP)

Postdoctoral Research Fellows

Research Professors

VisionKeepers

Visiting Researcher Programme

Unisa has a number of programmes in place to nurture and expand its research capacity. This section reports on the Master's and Doctoral Support Programme, the Postdoctoral Research Fellows initiative, the Research Professors programme, the VisionKeepers programme and the Visiting Researcher Programme.



THE MASTER'S AND DOCTORAL SUPPORT PROGRAMME (MDSP)

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).

Table 4: MDSP grants 2008 to 2012

COLLEGE/OTHER UNIT: MDSP GRANTS BY RACE	2008	2009	2010	2011	2012	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	21	62
Black	2	12	3	8	8	33
Coloured	2				4	6
Indian					1	1
White		4	4	6	8	22

COLLEGE/OTHER UNIT: MDSP GRANTS BY RACE	2008	2009	2010	2011	2012	TOTAL
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	5	59
Black	13	11	6	7		37
Coloured		2		1		3
Indian		2			1	3
White	2	6	3	1	4	16
College of Law	4	5		3	3	15
Black	1	4				5
Indian	2			1		3
White	1	1		2	3	7
College of Science, Engineering and Technology		6	3	3	4	16
Black		5	1	1	2	9
Indian		1		1	1	3
White			2	1	1	4
School of Business Leadership	1					1
Black	1					1
Professional and Administrative Research Group	2	10	5	6	3	26
Black	2	8	3	3	3	19
White		2	2	3		7
Total for Unisa	29	60	26	43	36	194



Abueng Molotsi

MDSP spotlight: Abueng Molotsi

As a former Computer Applications Technology teacher, Abueng Molotsi from the Department of Science and Technology Education in Unisa's College of Education, is aware of the information and communication technology (ICT) challenges facing teachers in South African secondary schools.

Her personal observations and experiences of how teachers lack the skills, or in some cases are unable to integrate ICTs in teaching and learning, have prompted her research interests in

computer-integrated education and ICT in education.

"The 21st century is characterised by information explosion which is constantly brought by a speedy acceleration of technology advancement. This information explosion assists in the creation of new knowledge as more ICT devices are brought forth. By obvious implication, 21st century learners require teachers who are knowledgeable and who possess technological skills that can develop them to participate actively in a rich technological environment," says Molotsi.

Having been awarded an MDSP grant in 2012, Molotsi is currently working towards her doctoral degree, researching secondary school teachers' ICT competency skills in classroom practices. Her fieldwork was conducted in the Bojanala District in the North-West province.

She says the MDSP initiative is a great advantage for staff as it enhances support. "The programme," adds Molotsi, "also encourages more academics to embark on master's and doctoral studies. In most instances, academics have financial constraints and these funds come to our aid as additional and much- needed funding."

Molotsi says that computers are dynamic in nature and that one needs to use the latest technology available otherwise the results achieved will be obsolete. "This funding is of great importance when it comes to technological compliance," she says. "I also appreciate that the programme motivates staff to conduct research timeously. As a researcher, I was motivated by the MDSP fund to target to complete my study within a specified time."

POSTDOCTORAL RESEARCH FELLOWS

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. 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.



Dr Rodney Hull

Postdoctoral Research Fellow spotlight: Dr Rodney Hull

Dr Rodney Hull is a Postdoctoral Research Fellow in the Department of Life and Consumer Sciences in Unisa's College of Agriculture and Environmental Sciences. His area of interest is Functional Genomics which involves using molecular biology techniques to identify the function and interactions of genes and proteins using a genome wide approach. The expression of genes can be controlled at many levels, says Hull, whose particular interest is the regulation of gene expression that occurs following the transcription of deoxyribonucleic acid

(DNA) into ribonucleic acid (RNA) through the alternative splicing of RNA transcripts and the expression of microRNA (miRNA) regulators.

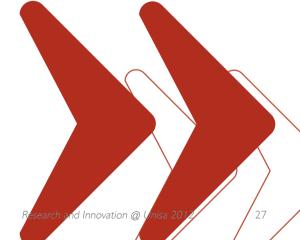
His specific research involves studying the effect that extracts from South African traditional medicinal plants have on the alternative splicing of miRNA and the regulation of transcription through miRNAs. "The vast majority of South Africans are still using traditional healers as their main source of healthcare and many of the plants traditionally used by these healers do contain medicinally active compounds. Some have been shown to have anti-cancer activities while others show bactericidal, anti-viral and anti-parasitic functions," says Hull.

He adds that through the identification of miRNAs and transcripts involved and de-regulated in the development and progression of the human immunodeficiency virus (HIV) and cancer, as well as the identification of medicinal plants or natural products that can be used to target these molecules, new potential drugs and drug targets will be identified, opening the door for drug discovery and development. "Currently this research has identified plant extracts with anti-cancer activities and has identified genes whose splicing pattern is altered following treatment with these plant extracts."

Hull says once the new state-of-the-art laboratories on the Science Campus are operational, research at Unisa will proceed at an accelerated pace. He adds: "The postdoctoral fellowship programme has provided me, and a variety of other young researchers, with the opportunity to step into the world of independent research. Postdoctoral fellowships are crucial in establishing a strong research community for any institution, as young researchers are the academic future of this country."

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 duties at the beginning of 2011.



The research professors active in 2012 are listed in the table below.

Table 5: Research professors 2012

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
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)	Residivism
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



Prof. Tana Pistorius

Research professor spotlight: Tana Pistorius

Tana Pistorius is a professor of Intellectual Property Law and Information Technology Law. From January to August 2012, she served as the Acting Director of Unisa's Directorate for Innovation and Technology Transfer.

Professor Pistorius is a rated researcher whose fields of specialisation include Intellectual Property Law, e-Commerce and Information Technology Law. She has a special research interest in issues affecting developing countries, and has delivered papers on these topics at

conferences and seminars in various African countries, and in Bulgaria, Canada, Egypt, Germany and the Ukraine.

She has received various research grants and scholarships, including one from the Max Planck Institute for Intellectual Property, Competition and Tax Law in Munich, and the Georg Forster Research Fellowship by the Alexander von Humboldt Foundation. She is also a research fellow of the foundation. Since 1997, she has been actively involved in policy formulation at national and international levels, and has also served as assistant editor and editor in various journals related to her fields of specialisation.

Pistorius teaches Electronic Commerce and Intellectual Property Law and Intellectual Property Management for the World Intellectual Property Organization (WIPO) Academy. Pistorius was appointed as a member of the Copyright Review Commission by the Minister of the Department of Trade and Industry in 2011 and the report on the collective management

of copyright in South Africa was published in February 2012. She was also appointed as the chairperson of the Advisory Board of the National Intellectual Property Management Office (NIPMO) by the Minister of Science and Technology from August 2012 to 31 July 2014.

VISIONKEEPERS

Goal 1 of the Unisa Research Strategy 2012 – 2015 is to increase innovative research and research capacity". The VisionKeepers Programme is a research excellence capacity development initiative, managed by the Research Department to strengthen research and scholarship at Unisa.

The goal of the VisionKeepers Programme is to support the development of highly competent and confident young researchers who have solid research plans. Unisa currently faces the major challenge of attracting, developing and retaining young researchers.

The main objectives of the VisionKeepers Programme are to

- · address the problem of an ageing research-productive cohort
- accelerate the development of the next generation of researchers
- support transformation of the research cohort
- improve the number of publications in high impact factor journals, thus enhancing the quality of scholarly research at Unisa
- increase the number of NRF-rated researchers at Unisa.

The programme supports young researchers by providing funding for either or both

- pursuing research work with a view to producing high quality research publications
- hosting a research mentor from another institution



Dr Michael Lehloenya

VisionKeeper spotlight: Dr Michael Lehloenya

After completing an LLD in 2011, Dr Michael Lehloenya, senior lecturer in Unisa's Department of Mercantile Law, was eager to do research abroad to expand his knowledge and exposure in his area of research interest in his area of research interest, International Trade Law.

He was hoping to establish contacts with a view to engage in future collaborative research and went about searching for institutions in the United States that would be willing to accommodate him. "I chose the US because of the good trade

law programmes offered by many of the country's universities as well as the fact that the country is very active in World Trade Organisation processes. I felt I stood a good chance of meeting trade law practitioners while there."

Shortly after Lehloenya began his search, he received an invitation to participate in a six-month visiting research scholar programme at the University of Florida (UF). "The offer was quite attractive, involving an opportunity to conduct research in my area of interest under the guidance of the Director of International Trade Law Programs at UF, Professor Stephen Powell. There were also possibilities to engage in collaborative research with UF academics and to lecture UF students. The visiting scholar would also be given support in the form of office space, access to library resources and study space, internet access, as well as access to WESTLAW and LEXIS-NEXIS databases."

He said his only obstacle in participating in the programme was funding as the UF would not provide any, and while Unisa's College of Law agreed to cover some of the expenses, it was not sufficient. "Luckily someone alerted me to the first advertisements for Unisa's VisionKeepers programme and I was able to apply just before the deadline. My application was successful and the university, through this programme, covered the rest of the expenses for the trip."

Lehloenya participated in the programme from July to December 2012 and published two journal articles in the *Manchester Journal of International Economic Law*, and the *Journal for Juridical Science*. He also worked on a contribution for the book *Corporate Law and Corporate Governance: A Global Picture of Business Undertakings in South Africa* (2nd edition) by Tshepo Mongalo. He participated in weekly seminars for two postgraduate courses, *Trade and Human Rights in the Americas* offered by Professors Steven Powell and Berta Hernandez; and *Law Science and Policies of Human Dignity* offered by Professor Winston Nagen. Professor Powell continues to take an interest in Lehloenya's research work.

Lehloenya applauds Unisa for initiating the VisionKeepers programme. "For the first time young academics at the university can spend extended periods in foreign institutions and other venues where they are able to interact at length with top experts in their fields of research and have access to resources not available locally. This allows for more meaningful learning, exchange of ideas and acquisition of skills, which can only be to the benefit of Unisa, South Africa and the continent."

VISITING RESEARCHER PROGRAMME

The Visiting Researcher Programme (VRP) is a new research excellence initiative, managed by the Research Department to strengthen research and scholarship at Unisa. The goal of this new programme is to raise the research profile of Unisa while increasing the already existing research capacity in colleges. The programme directly supports the Unisa Research Strategic Plan 2012 – 2015.

The goal of the programme is to support research excellence by providing funding for hosting a visiting researcher from an institution outside of Unisa for an extended period of up to two years.



Prof. Claude-Hélène Mayer

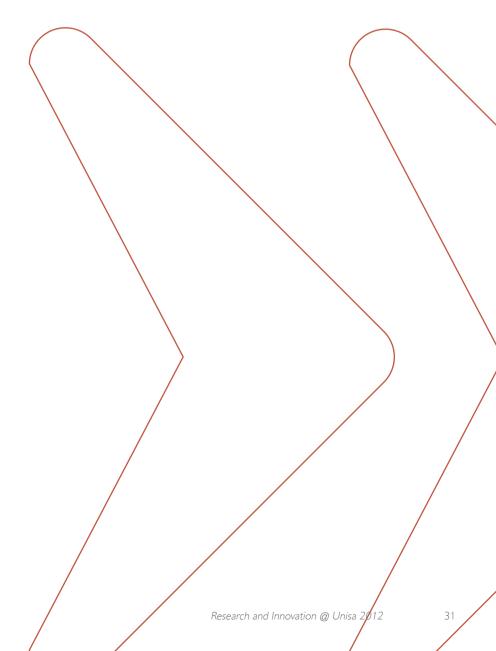
Visiting Researcher Programme spotlight: Professor Claude-Hélène Mayer

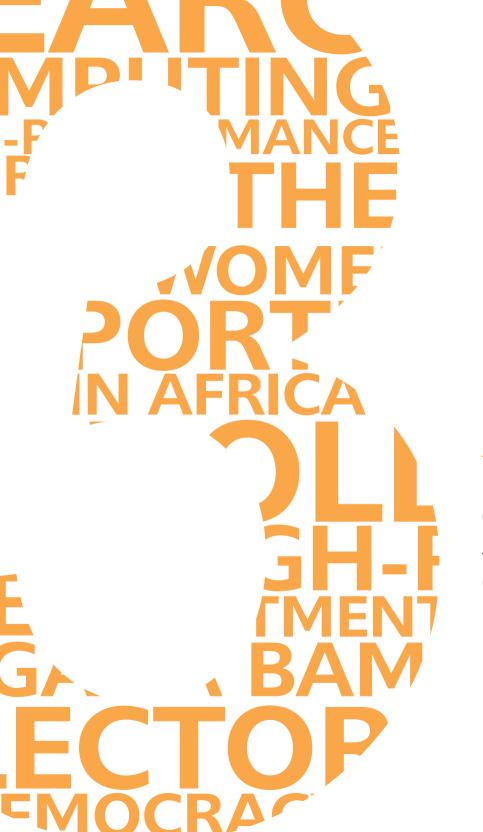
Professor Claude-Hélène Mayer is currently a research fellow at Unisa's Department of Industrial and Organisational Psychology. She holds a Doctorate in Cultural Anthropology and a PhD in Management and Habilitation in Psychology with a focus on Industrial, Organisational and Cultural Psychology.

While at Unisa in 2012, Mayer was the lead researcher for a study commissioned by Higher Education Resource Services South Africa (HERS-SA), a non-profit

organisation dedicated to the advancement and leadership development of women in the higher education sector. The research conducted investigates the conflict and cohesion experiences of women working in higher education. Mayer will be using these research findings to ground her approach as one of the facilitators at this year's HERS-SA mini-academy. She is a trained family therapist, hypnotherapist, mediator and consultant. Her research areas are in positive organisational behaviour with regard to transcultural health and well-being, salutogenesis, conflict transformation, gender, leadership identity and values.

She was Professor of Intercultural Business Communication (2009-2012) at Hamburg University of Applied Sciences (HAW) in Germany, and since 2012 is Adjunct Professor (PD) at the European University Viadrina in Frankfurt (Oder), Germany. She is author and editor of several books and articles on transcultural conflict transformation and mental health, and serves as a reviewer for several international journals.





Research chairs and institutes

Research Chair in High-Performance Computing

The Women Investment Portfolio Holdings (WIPHOLD) -

Brigalia Bam Research Chair in Electoral Democracy in Africa

Research Chair in Intellectual Property Management Unisa is proudly African and its research and innovation agenda is informed by the needs and aspirations of the African continent, yet also explore brave new frontiers in a number of key disciplines. This societal imperative is served by a number of chairs and institutes.



The Archie Mafeje Research Institute aims to enhance endogenous and Pan-African research for application in resolving Africa's social challenges. The South African Research Chair Initiative (SARChI) Research Chair in Development Education engages scholars on how to bring indigenous knowledge systems into the ambit of university curricula. The SARChI Research Chair in Social Policy and the Family does exciting work in social policy research.

On the science and technology front, Unisa's ongoing investment in research expertise and facilities ensures that Africa is increasingly viewed as a key role player globally; a continent with considerable knowledge-generating capacity and the ability to find home-grown solutions to critical African challenges. The UNESCO-Unisa Africa Chair in Nanosciences and Nanotechnology operates within the framework of the Nanosciences African Network and endeavours to harness these key multidisciplinary driving forces in the interests of developing emerging economies. In addition, Unisa funds research chairs in the key areas of High-Performance Scientific Computing, Ecotoxicology, Macroeconomic Policy Analysis, Superconductivity Energy Technology and Topology. We place the spotlight on a number of notable research chairs below

number of notable research chairs below.

RESEARCH CHAIR IN HIGH-PERFORMANCE COMPUTING

Following the introduction of a dedicated strategy and portfolio for research and innovation in 2011, Unisa is experiencing exciting times of change and growth. In 2012, the institution continued on its journey towards becoming a formidable hub of meaningful research output and achievement that is aligned with national imperatives. One of the Unisa research chairs established in 2012 is in Highperformance Scientific Computing.

The chair's incumbent is Professor Moritz Braun. He says in the research chair will undertake research activities mainly in, although not limited to, two topics in the broad domain of computational physics.



Prof. Moritz Braun

The first of these is the calculation of the properties of atoms, molecules and solids using the method of finite elements in three dimensions. The second topic is the simulation of seismic processes making use of parallel processing to estimate parameters describing the structure of the substrate or the seafloor.

Braun adds that the research chair will also provide some training to interested researchers on the tools and methods required for high-performance computing (HPC). In addition, the research chair will be available to assist researchers in other quantitative disciplines with evaluating their research questions as to whether HPC can be used for them.

THE WOMEN INVESTMENT PORTFOLIO HOLDINGS (WIPHOLD) - BRIGALIA BAM RESEARCH CHAIR IN ELECTORAL DEMOCRACY IN AFRICA



Dr Brigalia Bam



Dr Kealeboga Maphunye

The call for research underpinning electoral integrity and democracy in South Africa and the African continent becomes louder as more countries and societies opt for democratic forms of governance. Undoubtedly, systematic research on key factors that shape the survival and quality of democracy and elections will greatly enhance the lives and circumstances of Africans. Promoting and supporting a continent that conducts credible, free and fair elections with integrity as the main vehicle for effecting democratic change, the Women Investment Portfolio Holdings (WIPHOLD) - Brigalia Bam Research Chair in Electoral Democracy in Africa is well on its way to advancing electoral studies at Unisa. This is being done through research, tuition, training of electoral officials and community engagement on electoral democracy matters. The chair is also contributing towards establishing a democratic culture in respect of elections continentally.

The chair's roles and responsibilities include undertaking and disseminating research on electoral democracy, advancing knowledge in this area,

providing supervision, tuition and recruitment of master's and doctoral students in the field of elections and the creation of short-learning programmes on electoral matters. It is also responsible for community engagement, especially capacity-building and the promotion of partnerships with the Independent Electoral Commission (IEC) and other electoral management bodies (EMBs), civil society organisations (CSOs), community-based organisations (CBOs), non-governmental organisations (NGOs), governments, and academic and other institutions. Academic citizenship is another crucial role, especially the convening of seminars/ conferences related to elections, publications and knowledge dissemination on electoral democracy.

The chair has identified community-related engagements on elections in surrounding areas of Pretoria and plans to work closely with African election experts and observers on future elections in Africa. In addition to standing projects, much work is going into the chair's initiative to establish its role as a promoter of credible elections with integrity, which will be a catalyst towards improving Africa's governance systems.

In October 2012 Dr Kealeboga Maphunye, inaugural incumbent of the chair, attended the Inter-Faith Action for Peace in Africa (IFAPA) seminar on Free, Fair and Democratic Elections in Africa in Johannesburg as part of the academia and civil society component. At the end of 2012, he submitted a public commentary paper entitled Intolerance, Intimidation and Election Related Violence: Triple Threats to South Africa's Smooth Ride to 2014 Elections. to SABC online.

Relevant research has been and still is a key driver of the chair. The chair is working on collaborating with the Institute for African Renaissance Studies (IARS) on a research proposal aligned to Unisa's Management of Democratic Elections in Africa (MDEA) module. This certificate course, which was successfully implemented in 2011 and 2012, aims to produce graduates who will be equipped to ensure free and fair elections.

Maphunye firmly believes that the success of this chair is dependent on its role in research, community engagement, capacity building for African election officials, as well as being part of academic citizenship and tuition and supervision. "The chair has to develop and drive the research agenda on electoral democracy in Africa and ensure that democracy becomes the hub of election best practice and primary point of reference for those seeking information or data on election-related matters. But this requires inter, intra, and multi-disciplinary approaches as the subject of elections permeates different disciplines and areas of life. In many ways, some of the initiatives require close collaboration on community related engagements and the chair has to act as the university's main link in this regard," he explains. In terms of tuition and supervision, the chair will be working closely with the Department of Political Sciences and relevant academic partners to ensure that the subject area of elections and electoral democracy is covered in the wider university academic programme. However, this also requires working closely with the EMBs, universities and research bodies, the African Union, the United Nations and other multilateral agencies to help develop programmes that can improve the quality and integrity of elections in Africa.

THE RESEARCH CHAIR IN INTELLECTUAL PROPERTY MANAGEMENT

In order to remain internationally competitive, South Africa must be transformed from a resource-based economy to a knowledge society. This is exactly what government's ten-year innovation plan sets out to achieve, and the management of intellectual property (IP) emanating from research and development is central to this plan. Unisa has gained a unique opportunity to assume a leadership role in this regard through the establishment of its Chair in Intellectual Property Management.



Prof. loseph Straus

The Intellectual Property Rights from Publicly Financed Research and Development Act of 2008 (generally

known as the IPR Act) came into operation on 2 August 2010, and has important implications for all publicly financed institutions and universities. The Chair in IP Management will create an excellent opportunity for Unisa to play a leading role in this new sub-discipline of intellectual property law.

The chair will be funded for a three-year period by a grant from the National Intellectual Property Management Office (NIPMO), which was established in mid-2011 to promote and manage the objectives of the IPR Act, and resides within the Department of Mercantile Law. This is a great fit – the department has excelled in the teaching and research of IP law and

is also instrumental in the establishment of the Directorate: Innovation and Technology Transfer which will work closely with the chair.

Appointed in 2012, the chair's incumbent, Professor Joseph Straus of the Max Planck Institute in Germany, is an undisputed international leader in the field of IP law and policy. He advises international organisations, national governments and legislature, and has also been involved in counselling industry. Straus has chaired a number of committees of well-established international organisations, such as the Program Committee of the International Association for the Protection of Intellectual Property and the Committee for Intellectual Property Rights of the Human Genome Organisation.

One of the main functions of the chair is teaching – specifically, developing and teaching an LLM module in IP management as well as a postgraduate diploma in IP management for postgraduate students in law, science, engineering, and human, economic and management sciences. "A number of factors, linked not only to technology development, but also to changes which took place in national and international socioeconomic, political and legal spheres, resulted in a remarkable increase of interest by many groups of our society, who in the past were not attracted to IP," says Professor Straus. "The close link between technology, economics, business and law makes it imperative to, by means of training, enable these disciplines to properly function in micro- as well as macroeconomic terms."

In addition to developing (and teaching) formal coursework, the chair will also organise workshops and other events at which highly qualified experts in their respective fields in the world transfer their knowledge to South African experts. This, says Professor Straus, will contribute to improving the necessary skills. In keeping with Unisa's social responsibility, the chair will also mentor a candidate from a historically disadvantaged background to succeed the first appointment in the chair at the end of the three-year period.





Research niche areas

Niche area 1: Knowledge generation and human capital development in response to

the needs of South Africa and the

African continent

Niche area 2: The promotion of democracy,

human rights and responsible

citizenship

Niche area 3: Innovation and capacity building in

science and technology

Niche area 4: Economic and environmental

sustainability

Niche area 5: Open distance learning

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 abovementioned blueprints.



UCWANINGO IRHUBHULULO RESEARCH NDZAVISISO NYAKIŠIŠO PHUPHUTSO

Niche area 1

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

The University of South Africa recognises that one of the basic challenges facing the country and the continent is the scarcity of qualified and skilled researchers in many fields – especially in the natural, engineering, computing and accounting sciences. Research capacity building therefore has a key and basic strategic focus. To this end, our research effort is geared, among other things, towards producing the next generation of researchers, enabling researchers to acquire doctoral degrees and enabling post-doctoral researchers to acquire skills for maximum research productivity.

Given the above, it goes without saying that responsive knowledge production and capacity building is a key niche area at the university. In the project highlighted below, we examine research undertaken to empower African languages.



Prof. Sonja Bosch

Research empowering African languages

South Africa with its rich diversity of 11 official languages is seen as a potential emerging market where language technology (LT) applications can contribute to the promotion of multilingualism and language development. This has immense potential to impact positively on the South African community. One of the fundamental resources required for the development of a large number of core language technologies (LTs) and LT applications, is a WordNet, says Professor Sonja Bosch, head of Unisa's African Languages Department.

A WordNet, she continues, is a lexical database consisting of words that are grouped into sets of synonyms called synsets, and various conceptual-semantic and lexical relations are indicated between the synsets contained in a WordNet. "WordNets are not only useful, but also indispensable components of large automatic language understanding systems being developed and tested in academia and industry. Adding several South African languages to the WordNet web enables many such applications for each of these languages in isolation," adds Professor Bosch.

"Moreover, linking the South African WordNets to one another, and to the many global WordNets, makes cross-linguistic information retrieval and question answering possible, and significantly aids machine translation. This is an important contribution to the empowerment of the African languages within the newly established National Centre for Human Language Technologies."

In 2012, Unisa research in this regard focused on two projects - Scientific e-Lexicography for Africa (SeLA), and African WordNet. Explaining the importance of these projects, Professor Bosch says: "It is of the utmost importance that research involving the official South African indigenous languages should keep abreast of international developments. Languages for which no adequate computer processing is developed, run the risk of marginalisation in the global information society. The main research focus in these two projects is contributing to the technological development of the African languages."

One of the areas that were focused on by the Unisa partners in the SeLA project was theoretical models for electronic dictionaries, and more specifically, kinship terminology in Northern Sotho and Zulu. "Some areas of the Bantu lexicon and grammar show considerable complexity. They are thus a good example of domains where language learners and language users need guidance, and where new presentation devices may be appropriate, in order to optimally inform users about the part

of the complex system they need to know, in order to perform correct text production. To design such devices, the data must first be described precisely enough."

Emanating from this research, says Professor Bosch, were strategies for the treatment of kinship terms in paper and electronic dictionaries with English as the source and Zulu/Northern Sotho as the target language. "They conceptualise an innovative design for an interactive electronic dictionary with English as the source language and Zulu/Northern Sotho as the target that guides the user step-by-step through a sequence of selection processes utilising a decision tree algorithm, to the correct term. The article was published in the proceedings of the Euralex Conference of 2012."

Both projects, adds Professor Bosch, also include a human capacity building component. In the African WordNet project, training was provided to the linguistic team to acquire the necessary skills to develop new synsets and use the online DEBVisDic tools. More advanced training was also provided

during the visit of Dr Adam Rambousek (Centre for Natural Language Processing, Masaryk University, Czech Republic) who is a computer systems and technologies specialist and has extensive experience in the development and use of the DEBVisDic tool.

Professor Bosch says that Unisa as the only university offering tuition in eight of the nine official African languages, and a ninth language, isiNdebele, is to be added in 2014. "Unisa started teaching African languages exactly 89 years ago, in 1924. Since then, the Department of African Languages has been shaping the futures of students, who chose to study African languages. The African WordNets and SeLA projects both contribute to the development of African language resources that go hand in hand with the technological development of the languages. The international collaboration and capacity building, especially as part of the Women in Research funding project, also offer the potential to shape the future of continued development," concludes Professor Bosch.







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.

A highlight in this niche area during 2012 was research generally focused on regional integration in Africa, and more specifically, on continental integration, as described below.



Dr Babatunde Fagbayibo

Contributing to continental integration

Unisa's vision to be *the* African university in the service of humanity places on it an obligation to ensure that it is an incubator of research and innovation activities which provides solutions to issues affecting South Africa and the continent.

As one of the recipients of the 2012 Unisa Principal's Award for Excellence in Research, Dr Babatunde Fagbayibo from the Department of Public, Constitutional and International Law, is one of the university's researchers who is working determinedly to establish such solutions.

In 2012, Fagbayibo's research generally focused on regional integration in Africa, and more specifically, on continental integration. Such research comes at an opportune time as this year as the Organisation of African Unity (OAU) acknowledges 50 years since its inception, but while the OAU celebrates its successes, it is also cognisant of the fundamental issues that plague its successor, the African Union (AU) in the 21st century.

Fagbayibo's research speaks to innovative solutions for Africa's challenges. "The 2012 research projects mainly looked at policy issues around the strengthening of the AU, so that it could be the veritable vehicle for driving continental integration in Africa. The research looked at the African Union Commission and how it can be strengthened as the engine room of continental integration. It also considered the importance of adherence to shared values by member states of the AU, as an important ingredient of the attainment of the desired continental integration," he says.

Fagbayibo sees a viable integration process as the answer to the many problems facing Africa. His focus on the institutional dimension of the process is predicated on the view that an effective administrative and political transnational mechanism can play a huge role in achieving the objectives of uniting and enhancing the development of the African continent. "A strengthened AU is thus central to the harmonisation of laws and the general political and economic development of the African continent."

Fagbayibo comments as follows on the broader niche area: "Given Unisa's vision, and its research goals and targets, the activities hosted by the university, aimed at strengthening research in this area, are a step in the right direction." He highlights partnerships with other African universities and says it is vital for Unisa to continue, and build upon these partnerships as this is a positive development towards alleviating Africa's challenges.

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 2012. One of the innovation success stories during the year was research into innovative intelligent systems, as detailed below.



Prof. Zenghui Wang

Innovative intelligent systems

To design and develop applicable intelligent systems, a researcher has to be innovative and pioneering in his or her field. Professor Zenghui Wang from Unisa's School of Engineering is one such researcher.

Having graduated in 2006 with a doctoral degree in Control Theory and Control Engineering at Nankai University in China, Wang, one of the recipients of the 2012 Principal's Award for Excellence in Research, belongs to a notable group of Unisa academics who are aiding the university in achieving its goals of becoming a leading global centre of excellence in science and research.

In 2012 he conducted intelligent systems research that specialises in the theory and application of systems which perceive, reason, learn, and act intelligently. The aim of this research, he says, is to create intelligent systems to make life and the work environment more comfortable than it currently is. "In this research, there are several research topics. One of these research topics is automatic control. Automatic control is everywhere. It is a truly ubiquitous technology without which modern life will not be possible."

Explaining why this sort of research is important for South Africa and the continent, Professor Wang says that this is not only theoretical research but it also related to engineering applications such as robotics, aerospace flight, washing machines, and air-conditions, amongst others. "Some research results such as ultrasonic measurement, control algorithms, and optimisation algorithms can be applied in the areas of industry which can benefit the economy of South Africa."

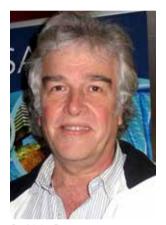
Based on the research results in 2012, Wang says six accredited journal papers were published or accepted and four conference papers were published and presented in 2012.





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.

Water-related issues remain high on the environmental agenda, and Unisa takes great pride in the project described below.



Prof. John Dewar

Empowering society through rotavirus and water research

The World Health Organization estimates that rotavirus-associated gastroenteritis is the third most common cause of death in young children, with around 453 000 deaths annually and more than 90% of these annual deaths occurring in developing countries.

"As an African researcher, it is therefore very easy to become passionate about rotavirus and water research," says Professor John Dewar from the Department of Life and Consumer Sciences at Unisa's College of Agriculture

and Environmental Sciences. He says that given the high mortality among African children, and the disease burden associated with rotavirus infection, the need to develop and introduce rotavirus vaccines to reduce acute rotavirus diarrhoea and subsequent risk of hospitalisation has been

emphasised. Since 2006, rotavirus vaccines have become available but research in the field of rotavirus epidemiology is still essential.

Unisa is answering this rotavirus research call, working closely with the Medical Research Council (MRC) and the MRC Diarrhoeal Pathogens Research Unit at Medunsa, says Professor Dewar. During 2012, the academic co-authored a review of rotavirus and other gastroenteritis-associated virus pathogens, and also supervised four MSc students conducting fundamental rotavirus and water research.

Additional postgraduate research on this topic continues apace, says Professor Dewar, and involves the use of modern molecular techniques to screen both young and older patients for rotavirus infection in Gauteng. "Such research is also being expanded geographically to include the Mpumalanga Province and the Southern Cape," he says.

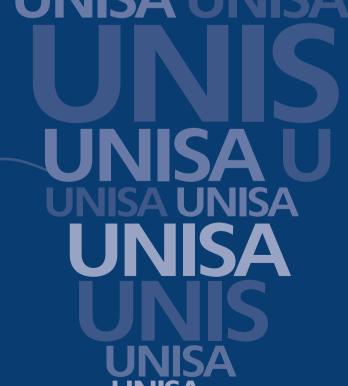
Professor Dewar says because rotaviruses can be spread by contaminated water, rotavirus research goes hand in hand with research involving water quality, both from a microbiological as well as from a chemical viewpoint. "Inadequately treated wastewater or sewage effluent is harmful to the receiving aquatic environment and water-borne chemicals and microbial pathogens pose a health risk to anyone living downstream from pollution point sites."

In conclusion Professor Dewar says that Unisa's contribution to research in these areas is of vital importance because it empowers people. "Through this research people are provided with knowledge and life skills which contribute to their taking responsibility for their own health. The primary intention of these rotavirus and water studies was to assist children and their communities across a broad front and by so doing implement and extend the Unisa vision of being *the* African university in the service of humanity."

UNISA UNISA

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. Unisa's Institute for Open and Distance Learning and research into ODL in mathematics are profiled below.



Prof. Mpine Makoe

The Institute for Open and Distance Learning

Open distance learning (ODL) does not come without its challenges and this applies to both studying and teaching through ODL, says the Head of Unisa's Institute for Open and Distance Learning (IODL), Professor Mpine Makoe. Studying through ODL requires more self-discipline and commitment from students, and teaching involves a continuous process of finding innovative and effective ways of teaching to counteract the absence of physical contact between lecturer and student. This explains why research on the 'what' and 'how' of teaching through ODL is receiving so much attention at Unisa.

When the concept of open and distance learning (ODL) research was introduced at Unisa, apprehension set in amongst academics and researchers – some of them feeling that they were being dictated to on the

types of research they should conduct. Professor Makoe says that Unisa's blueprint in this regard, *ODL Research Framework & Plan 2012 – 2015*, provides an overview of how the university intends to respond to ODL challenges through ODL research. "The purpose of the plan," she says, "is to provide strategic direction geared towards increasing ODL research at Unisa. To realise this objective, four strategic thrusts were identified: assessment in ODL, the impact of student support (affective, administrative and cognitive) on student success and retention, technology-enhanced teaching and learning, and the changing role of academics in ODL environments. These have been emphasised to effectively transform the Unisa business model by establishing effective ODL best practice."

The IODL has hosted various workshops, forming communities of practice for each of these thrusts to provide leadership and support to individual and collaborative researchers from a range of academic and professional contexts. "Unisa intends becoming a leading global centre of excellence in teaching and learning as well as science and research," says Professor Makoe, "Unisa therefore, has to be at the forefront of ODL research."

Each thrust is lead by an academic or professional staff member from the institute who provides leadership and expertise to staff who wish to collaborate in research within their thrust. The thrust leaders have conducted workshops in which staff were invited to discuss the thrust research scope as well as join the thrust. As a result of these workshops, individual staff members have been identified and their research interests within the thrust have been discussed and noted.

"All thrust leaders," says Professor Makoe, "are at present developing a research proposal and project plan, taking into account the research interests of the academic and professional staff who indicated their willingness to participate. These projects include proposal writing, ethical clearance, discussions on the topic, research report writing, conference presentations and publication of the results of the research, either as individuals or as a team."



Dr Eeva-Marie Rapoo

Mathematics ODL research: A bold addition to Unisa's teaching and learning efforts

As an open distance learning (ODL) institution Unisa is constantly researching and considering new methods of delivering course content to students. Some subjects are easier to relate to and teach in an ODL context but there are some that require a degree of faceto-face interaction to fully understand. Mathematics is one such discipline that falls into this quagmire and Dr Eeva-Maria Rapoo, Chair of the Department of Statistics, is currently heavily invested in research to find a space for mathematics in true ODL teaching.

"One of my points of interest is that you get these fancy theories that in general talk about ODL and my question is: I'm a mathematics lecturer — what's in it for me in a positive sense? How do I apply these theories and teach mathematics to students? How do you take a concept like two over four equals one over two and make group members understand that in a socially constructive way?" Rapoo does not shy away from the fact that mathematics presents a unique set of challenges in terms of broadening its teaching in an ODL framework. She's currently doing mathematics research but explains that she finds ODL research fascinating as well.

This inspired Rapoo to seriously consider how she could aid her students by developing new strategies within the subject matter. Being practitioners of ODL and teaching mathematics gives Rapoo and her colleagues an understanding of both, through experience and a knowledge of what students find difficult. She feels that academics should now be doing research on how to better teach ODL and has even created a few innovative ways to do so. "One of my modules was very visual and required students to see a three-dimensional graph which is in motion. When students see the study guide, the pictures are static and not all of them know that an arrow means motion. What I created, which was very simple, was a computer-aided package enabling the screen to display motion. I also wanted to make it interactive so I can get feedback," she says.

Rapoo's research attempts are geared towards ensuring that her students understand the course work even if she's not present. She admits that face-to-face education is the best available but is adamant that ODL does not sacrifice quality. The question then becomes how to reproduce models without alienating students. "With the example of the three-dimensional graph and showing motion, I was able to extract what was missing from me not being there, and I think that cuts across all of Unisa. That is what we are trying to get out of this: do the research to find out what, in our particular case, is it that we need to add," she explains.

Problem-based learning and how to teach learners how to solve problems in mechanics as well as e-tutors are some of the avenues Rapoo is considering. She is also working on modifying *myUnisa* to help in her particular field through visual aids in a virtual learning environment with groups or a tutor. "People in face-to-face institutions get that extra teaching but you do not get it from textbooks and there's where every single academic at Unisa has this power because of what they know and because they know what their students are not understanding in the books," she says.





Research support

Unisa Press

Unisa Library

Directorate: Innovation and Technology Transfer

Central to Unisa's Research Strategy is the objective of sustaining a supportive, enabling research environment. This section reflects on the 2012 activities of three key players in this regard: Unisa Press, the Unisa Library and the Directorate: Innovation and Technology Transfer.













UNISA PRESS

Unisa Press is the largest university press in South Africa, with the biggest publication list. The Press supports the Research and Innovation Strategy for Unisa through playing a role in effectively promoting accessibility to, and dissemination and development of knowledge and research outputs, as well as playing a role in supporting lifelong learning.

Unisa Press functions within Unisa following a classic university press model, with the university's Senate Publications Committee overseeing the acceptance of publications and the quality of peer-review processes. This model requires a delicate balancing act between promoting academic merit and the commercial aims of self-sustainability or cost recovery.

Unisa Press publishes independent scholarly and academic books as well as expanding into the broader specialist books arena. During 2012, the Press published a total of 23 books. Unisa Press is also the publisher of a substantial list of accredited academic journals. The 2012 publishing list consisted of 39 accredited journals, with a total of 130 issues. Additionally, five non-accredited journals is published and being developed for accreditation.

It is the only African press with such an extensive and vigorous combined list of books as well as journals. The Press is seeing success after success in terms of increasing prestige (by means of producing products of high quality and by ensuring increased visibility, improved marketing, distribution and sales) as well as income. It publishes within diverse subject fields from art history, architecture, psychology, to sociology and African studies. Unisa Press celebrates its location and situation as an African university press by publishing a rich and varied range of research works that reflect the historical, cultural and intellectual heritage of the continent. In line with the university's Research and Innovation Strategy, particular attention is paid to obtaining quality publications with a focus on

- 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.

Unisa Press currently has the largest journals publishing programme in South Africa, which provides a unique platform for African researchers, and



at the same time makes African scholarship visible around the world. The journals section has been expanded, and successful partnerships with Taylor & Francis and NISC have been maintained and further developed.

Inspired by the university's vision, towards *the* African university in the service of humanity, the staff members of Unisa Press aspire to deliver high-quality products and services in an efficient, effective and professional manner.

Increased visibility and prestige

The quality of content of all publications is on an international standard, and the processes of producing these publications have improved tremendously and continue to do so. A new marketing strategy was developed and this was actively implemented, improved and maintained in 2011 and 2012, resulting in higher sales, improved global visibility and cost savings.

The improvements effected in our products, turnaround times and marketing and distribution have lead to a visible and in some respects dramatic increase in prestige and interest from authors, academic editors and co-publication and distribution partners.

Highly prestigious works are being commissioned by the Press, and in 2012, *Reading Revolution: Shakespeare on Robben Island*, by Ashwin Desai, was launched by the Deputy President of South Africa at the Unisa 2012 Academic Opening. The book was later relaunched at several high-profile events nationally (including an event on Robben Island).

Distribution partners

In 2012, Unisa Press books became, for the first time, available at all major retailers in the South African Development Community, by means of a distribution agreement with an external distribution agent. This initiative lead to a substantial increase in visibility within the broader reading market.









The four Unisa Press titles nominated for the Sunday Times Alan Paton Awards

Directly linked to this is the nomination of four 2012 Unisa Press titles for the prestigious Sunday Times Alan Paton Awards.

Unisa Press has international book distribution contracts with ISBS (United States and Canada) and Eurospan (Europe) to ensure international visibility of all books.

Unisa Press negotiated a beneficial journals subscription and distribution deal with Taylor & Francis and NISC for sub-Saharan distribution and subscription management (effected in 2011). The use of a professional distribution agency is not only enhancing the reputation of the journals and the prestige of the Press, it is leading to increased sub-Saharan subscriptions and provides the Press with reliable information on subscription figures and income earned.

During 2012, Unisa Press was represented at a number of institutional and other significant events in the publishing industry, including the STM-PASA Seminar *Academic and Professional Publishing and South Africa*, the International Publishers' Association conference, the Cape Town Book Fair and the Frankfurt Book Fair. Unisa Press is an active member of the Publishing Association of South Africa and the National Scholarly Book Publishers Forum.

Publishing partners

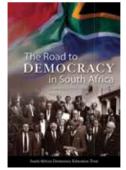
Unisa Press is constantly on the lookout for beneficial co-publication opportunities that will improve prestige, visibility and cost-effectiveness. Successful co-publication opportunities grasped in 2012 include the continuation of the prestigious *The Road to Democracy in South Africa* series with the South African Democracy Education Trust (SADET), the publication of *80:20: Development in an unequal world* with Irish NGO 80:20 – Educating and Acting for a Better World. Agreements were made with a host of other partners, including Athabasca University Press.

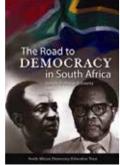
The Unisa Press co-publishing programme with Taylor & Francis continues to raise the profile and reach of the journals concerned, and return substantial government funding grants to the university.

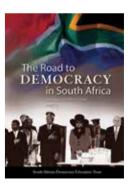
Roughly 69% of articles by Unisa-affiliated authors in Taylor & Francis (T&F) journals are published in the T&F-Unisa SAPSE-accredited publishing programme. In total, Unisa authors across both co-published and other accredited T&F journals have published an estimated 393 articles for the period 2007 to date.

Online usage continues to increase year on year, in line with international online trends. This bears testimony to the growing interest the co-published titles continue to generate, the quality of the joint programme, and the positive effects of online discoverability and marketing.

Nine co-published titles are currently listed on ISI/Thomson Reuters' Indexes. Key factors are timeliness, consistent quality, a varied and respected author base, rigorous peer review, and a distinctive contribution to the literature.







Books and journals

The tables below contain details of books and journals published during 2012.

Table 6: Books published during 2012

AUTHOR(S)	TITLE		
Beekman, L, Cilliers, C & De Jager, A	Student counselling & development: Contemporary issues in the Southern African context		
Bhudu, P & Malobola, I	Amadlelo (short stories – isiNdebele)		
De Jongh, M	Roots & routes: The Karretjie people of the Great Karoo. Marginalisation of a South African first people		
Desai, A	Reading revolution: Shakespeare on Robben Island		
Goniwe, T	Space: Currencies in contemporary art		
Ghyoot, V & Collins, T	Commercial property finance, development & investment		
Jenkins, E	Seedlings: Essays on children & their books		
Keller, E	Religious ideas & institutions & transitions to democracy in Africa		
Lesejane, I	Re Tswa Kae Batswana?		
Mamabolo, M	Sauti! Moral & spiritual challenges facing 21st century Africa		
Mathebe, L	Mandela & Mbeki: The hero & the outsider		
Mistry, J & Ellapen, J	We remember differently: Race, memory & imagination		
Mofokeng, T et al.	Ho Senyehile Kae?		
Naidoo, M	Between the real & the ideal: Denominational perspectives on ministerial formation in South Africa		
Ngobeni, T	Matimu ya mihloti		
Qwabe, T	Zibambe ziqine		
Regan, C et al.	80:20: Development in an unequal world		
Sibiya et al.	Amandlingozi		
Steyn, G & Van Niekerk, E	Human resources management in education (3rd edn)		
Stoffberg, H, Hindes, C & Muller, L (eds.)	Landscape architecture in South Africa (Compendium)		
Stoffberg, H, Hindes, C & Muller, L (eds.)	Landscape architecture in South Africa (Reader)		
Wa Maahlamela, D	Sejamoledi		
Xaba, S	Iqonde kuphi le ndlela?		

Table 7: Journals published in 2012 and article count per journal

JOURNAL TITLE	ARTICLE COUNT
Africa Education Review	33
African Historical Review	12
African Journal of Herpetology	10
African Journal of Nursing and Midwifery	25
African Journal of Research in Mathematics, Science and Technology Education	35
African Security Review	14
Africanus	15
Agenda	44
Agrekon	34
Commonwealth Youth and Development	6
Communicatio	22
Critical Arts	51
De Arte	4
Economic History of Developing Regions	13
Education as Change	22
English Academy Review	32
English Studies in Africa	17
Ecquid Novi	17
Fundamina	18
Imbizo	7
International Journal of African Renaissance Studies	8
Journal for Semitics	18
Journal of Early Christian History	29
Journal of Literary Studies	25

UNISA LIBRARY

In 2012, the Unisa Library implemented a new basket of services and collections to improve both the learning and research experience.

Dedicated research space

Visits to the dedicated research space increased in 2012. A total number of 52 617 clients visited and used the workstations during the year, compared to 31 630 in 2011, which indicates a 66% increase in the number of researchers who visited the research space.

Expansion of the library's collections

General collections

Unisa Library offers a wealth of resources to researchers. The best-endowed libraries are known to help institutions recruit and retain top researchers with their vast collections. Besides the "pulling power" of library collections, the library also attracts external researchers who make use of printed content, and archival and special collections. With more than three million items, it is the largest and best-stocked academic library in sub-Saharan Africa. The Unisa Library's information resources for 2011 and 2012 are depicted in table 8.



Table 8: Information resources 2011-2012

	2011	2012
Books	2, 681 920	2, 740 996
Subject databases	441	468
Electronic journal titles	84 247	96 904
Electronic books	50 000	100 000
Microfilms and microfiches	250 000	250 000
Audiovisual resources	34 000	34 000

The library also has a range of daily newspapers and an extensive archival collection





The Unisa Institutional Repository (UnisalR)

In addition to general information resources, the library also houses the Unisa Institutional Repository (UnisalR). The UnisalR is a comprehensive digital repository of 7 621 full text articles, intellectual output of Unisa and ODL and Unisa inaugural lectures. Items on UnisalR are now also searchable via major search engines such as Google, and are harvested by large international databases such as OCLC with an average of 312 773 downloads per month. This contributes to overall institutional reputation and prestige. Exposure of an institution's research output to the local and global communities is known to also influence peer assessments of the institution in general thereby increasing its visibility and research profile.

Publishers' archives

Lastly, the library has acquired more publishers' archives. In 2012, the library purchased the following:

- Annual Reviews
- National Geographic Magazine Archive
- Nature Scientific American
- Thieme Chemistry Journals
- Vogue Magazine Archive
- Wiley Journals Archives

Departmental websites

In order to position itself within the evolving digital landscape in which researchers access the virtual libraries, Unisa library has developed customised departmental websites in collaboration with academics. These websites contain customised, subject-specific information for all the academic departments and are updated regularly with relevant information pertaining to information resources budgets, information resources

ordered and received, and any other library-related information. The total number of websites added by the end of 2012 was 56, an increase from 48 in 2011. The total number of searches conducted in 2012 was 4 575 compared to 4048 in 2011 and 3 823 in 2010, which indicates a 13% increase in the number of subject-specific searches in 2012. This has facilitated the integration of and access to the library's information resources; structured dialogue between researchers and librarians in order to respond to researchers priorities, interests, concerns and developments.

Other research support

Clients with disabilities

With an all-inclusive service delivery culture at the library, strategies were implemented for researchers with physical disabilities as well. In order to meet the needs of clients with disabilities, the library acquired adaptive assistive technologies. In 2012, the following additional equipment was acquired:

- A wide screen that magnifies text, for use by visually impaired clients
- 10 headphones
- Dolphin pens
- A zoom text keyboard
- 20 additional EasyConverters

Extended hours at branch libraries

Unisa Library introduced the "8 to 8 @ your library" service in 2012 in the regions. This service means that the library will be open from 8:00 to 20:00 daily, in order to offer longer hours of access to information resources and library services to clients. Implementation of the "8 to 8 @ your library" service was extended to the Cape Town, Polokwane, Durban, Florida, Sunnyside, Ekurhuleni and Johannesburg branch libraries in 2012.

DIRECTORATE: INNOVATION AND TECHNOLOGY TRANSFER

The Directorate: Innovation and Technology Transfer (DITT) forms part of the Research and Innovation (R&I) portfolio at Unisa. The DITT was established in 2011, partly to give effect to the Unisa's obligations under the the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act) of 2008, and, importantly, to support the progressive realisation of Unisa's vision. In particular the DITT's remit supports Unisa's strategic goals through supporting and facilitating the establishment of an environment conducive to research and innovation, and by protecting and endeavouring to derive value from intellectual property (IP) emanating from Unisa's research and development activities.

The DITT aspires to be a leader in the management of innovation and technology transfer through the adoption and application of world standards at Unisa to facilitate the process of harnessing research outcomes for the public good. The functions of the DITT are as follows:

- Fostering a shared or common understanding of the emerging local policy drive for innovation and intellectual property management (IPM) through targeted workshops, information sessions, and seminars designed to stimulate and enrich conversations about innovation and IPM at Unisa.
- Creating an environment supportive of innovation through various support mechanisms
- Managing IP emanating from Unisa's research and development activities in line with the university's IP Policy to the extent that it complies with the IPR Act and other relevant legislations through instituting appropriate processes that promote the identification, protection and beneficiation of such IP.
- Creating links and, where appropriate, facilitating partnerships with the private sector and other organisations to the extent that such linkages and partnerships support innovation,

 Encouraging entrepreneurship among staff and students and to finding mechanisms to support participation in national initiatives supportive of entrepreneurship.

The DITT endeavours to be a preferred resource for Unisa's staff and students with regard to innovation and IP matters. The DITT endeavours to provide a quality service to our internal and external stakeholders by providing the right information to the right audience at all times.

The DITT offers the following services:

- Technology transfer (IP protection and commercialisation)
- Innovation support initiatives
- IP advice and compliance with NIPMO requirements
- Training and capacity development





Research in the future



MAJOR STRIDES IN DEVELOPING THE SCIENCE CAMPUS

Set to open in 2013, development of Unisa's Science Campus in Johannesburg reached two major milestones in 2012: the completion of the first science laboratories in March and the launch of the Horticulture Centre in September.

Countdown to science excellence

After seven months of development, the first of three state-of-the-art science laboratories was completed in March 2012.

Speaking at the launch event, Professor Maggi Linington (Executive Dean: College of Agriculture and Environmental Sciences - CAES), discussed the impact that these labs will have on the college, stressing that they will increase Unisa's footprint in terms of research. "We will be able to attract the top new scientists in the country. This is the place to be and we expect to increase researchers by up to four hundred percent," she said.

Research and Univation @ Unisa 2012

Professor Gugu Moche (Executive Dean: College of Science, Engineering and Technology - CSET), shared her excitement about the significance of the new laboratories as CSET is the second college that will be based at the Science Campus. She said the new development will propel Unisa even further. "We are now at the cusp of another growth of the college and we will be able to deliver more outputs and have state of the art, innovative researchers."

Major boost for horticulture at Unisa

Unisa's state-of-the-art Horticulture Centre was launched with the theme "Partnering with industry in skill development" at the Unisa Science Campus on Wednesday 19 September 2012.

"The Horticulture Centre was a dream that started a quarter century ago," said Professor Jimmy Hendrick, Director of the School of Environmental Sciences. He then went on to say that the concept was to provide qualifications in science and provide students with opportunities to do their practical work and research in a laboratory with advanced equipment and a facility where they could make a difference.











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