

An abstract graphic on the left side of the slide features several 3D cubes in various shades of blue, grey, red, and orange. These cubes are arranged in a cluster, with some appearing to float or be connected by thin, light grey lines that radiate outwards. The background is a solid light blue-grey color.









RESEARCH INNOVATION @UNISA 2018

Define tomorrow.

Table of Contents



CLICK EACH ICON
TO NAVIGATE

	MESSAGES.....	01
	RESEARCH DASHBOARD.....	02
	RESEARCH PROGRAMMES AND GRANTS.....	03
	RESEARCH CHAIRS AND INSTITUTES.....	04
	RESEARCH NICHE AREAS.....	05
	ENABLING RESEARCH.....	06
	STUDENTS.....	07
	HIGHLIGHTS.....	08



[BACK TO CONTENTS](#)



Messages

01



Foreword By the Principal and Vice-Chancellor

Professor Mandla S Makhanya

We are witnessing a fundamental interrogation of the role, function and shape of higher education in the 21st century at a time when our world seems directionless and its citizens increasingly confused and, often, hopeless. An increasing array of research and data points to a vastly different future global population in terms of age and means, while yet other research and data are shedding some light on the kind of world that our youth will inherit and, with that, the implications for them if we fail in our responsibility to educate and prepare them appropriately.

Closer to home, we are under sustained pressure to alleviate the current socioeconomic blight on our citizens and to redesign a society that facilitates individual and collective prosperity. Our universities are the key drivers of this societal transformation and revitalisation through the provision of relevant, quality courseware, thoughtful and effective community engagement and, most importantly, research that will facilitate an understanding of our context (and in Unisa's case, our typology as a comprehensive open distance e-learning university) and will demonstrate the kind of innovation that will propel us into the future as a university, a society, a country and a continent.

Unisa is committed to playing its part as a transformation agent nationally and continentally and we therefore remain dedicated to the deliberate growth in research outputs and collaborations, the targeted development of our researchers and their ratings, growing the numbers of endowed chairs, strengthening the role of the university as the leading provider of postgraduate programmes in Africa, and investing in innovation and commercialisation projects, to name but a few.

This report sets out the progress and achievements in the Research, Postgraduate Studies, Innovation and Commercialisation portfolio for 2018. I am pleased to endorse the report and I would like to commend the efforts of all staff who have contributed to the successes that have been recorded. I look forward with anticipation to improvements in the performance of this portfolio, as it builds on the very solid foundations that have been laid in preceding years.



I am pleased to endorse the report and I would like to commend the efforts of all staff who have contributed to the successes that have been recorded this past year."



Message from the Vice-Principal: Research, Postgraduate Studies, Innovation and Commercialisation

Professor Thenjiwe Meyiwa

In 2011, pursuant to a journey of boldly advancing our research profile and standing, Unisa established a distinct Research and Innovation portfolio, coupled with several programmes intended to support research. Almost a decade later, upon reflection, we acknowledge that this research path has led to a rise in the university's research prominence, demonstrated in several 2018 landmarks that we present in this report.

This 2018 research report not only represents how the kind of research we have embarked on has been original and evidenced-based, but also demonstrates how Unisa has advanced in conducting research that contributes towards solving complex environmental, cultural and socioeconomic problems of national concern. We present outputs and activities that are a record of how Unisa researchers – both upcoming and senior, and at national and international level – collaborate with external partners. The content of the research we conduct emanates from Unisa's 2016–2030 strategic imperatives, which, in themselves, are closely aligned with national and global sustainable development goals. These include strengthening water security, contributing to reducing conflict in Africa and highlighting risks of climate change. This report is testimony to the fact that Unisa's research activities serve as a forum for our researchers to employ methodical, empirical methods to

respond to questions of national concern. Because most of our research is evidence-based, research outputs resulting from such a methodical approach are applied to guide or inform specific decisions and, in turn, lead to significant outcomes.

This report demonstrates how various research activities in 2018 have connected and enabled various groups of Unisans to work together and adopt a holistic approach to solve critical issues, thus setting their sights on common goals.

I am pleased to present to you the 2018 Annual Report of the Office of the Vice-Principal: Research, Innovation, Postgraduate Studies and Commercialisation. This report summarises outcomes of and accolades for the activities of several hundred Unisa staff members, including core researchers and technical, professional and administrative staff in the advancement of Unisa's research mission. I commend them on their accomplishments and I am very proud of them.

To learn more about our activities, I encourage you to continue reading this annual report and to visit our website at www.unisa.ac.za.



[BACK TO CONTENTS](#)



Research Dashboard

02



Research outputs

The research conducted at universities in a developing country such as South Africa plays an important part to ensure that the country actively participates in the global knowledge society and competes in knowledge economies. Research outputs or, put differently, the pathways in which research is made available to people other than the author, serve as very important indicators of the effectiveness of research programmes, in this instance those at the University of South Africa.

A dedicated research portfolio, clear research strategy and significant investments in resources and support for researchers all work together to stimulate and enhance research performance across disciplines.

Research output summary

Unisa's total weighted research outputs indicate an **8.4% decrease over the 2017 figures**. This decrease is also reflected in the table below, **depicting the weighted outputs per capita of -8.6% in 2017**.

Table 1: Comparative research dashboard indicators ¹

Note: Position indicates Unisa's ranking when compared with other higher education institutions in South Africa

	2013		2014		2015		2016		2017		Growth (2016/7)
	Actual	Position	Actual	Position	Actual	Position	Actual	Position	Actual	Position	
Publication output	1030,04	7th	1172,84	6 th	1328,6	6 th	1441,49	6 th	1283,5	6 th	-1 1,0%
Total weighted research output	1947,04	7th	2563,84	6 th	2546,6	6th	2917,13	6 th	2673,5	6 th	-8,4%
Weighted output per capita	1,19	13th	1,49	12th	1,48	12th	1,63	11th	1,49	13th	-8,6%

¹ Audited figures for 2017.



Table 2: Publication output breakdown

*Publication	2014	2015	2016	2017	2018
Journals	1027.67	1165.74	1118.63	1108.11	1086.18
Book /Book chapters	66.56	78.28	268.17	210.25	265.74
Conference proceedings	78.61	98.73	93.58	66.78	95.36

Research outputs submitted to the Department of Higher Education, Science and Technology 2018

Master's and doctoral outputs

To build a knowledge-based economy South Africa has to increase its number of high-level qualifications. The NDP 2030 has set a target of 100 doctoral graduates per one million of the population by 2030. This would translate into 5 000 PhD graduates per annum in 2030.



*In 2018, Unisa performed well by delivering no fewer than **1 270 master's and doctoral graduates**.*



Table 3: Master's and doctoral graduations by college, 2014 to 2018

College and level	2014	2015	2016	2017	2018
Accounting Sciences					
Doctoral degrees	5	1	3	1	7
Master's degrees	10	13	12	18	24
Agriculture and Environmental Sciences					
Doctoral degrees	19	8	14	23	24
Master's degrees	47	58	63	71	50
Economic and Management Sciences					
Doctoral degrees	23	12	25	31	29
Master's degrees	53	55	84	73	64
Education					
Doctoral degrees	48	65	64	75	51
Master's degrees	107	97	76	97	72



College and level	2014	2015	2016	2017	2018
Human Sciences					
Doctoral degrees	124	100	118	110	111
Master's degrees	296	173	180	157	188
Law					
Doctoral degrees	22	18	25	9	30
Master's degrees	139	115	135	100	106
Science, Engineering and Technology					
Doctoral degrees	17	13	18	24	33
Master's degrees	36	50	42	69	53
Graduate School of Business Leadership					
Doctoral degrees	10	18	29	13	24
Masters degrees	342	375	441	346	399
College of Graduate Studies					
Doctoral degrees	-	-	-	3	5
TOTALS					
Doctoral degrees	268	235	296	289	314
Master's degrees	1030	936	1033	931	956

Table 4: Master's and doctoral graduations by race, 2014 to 2018

Qualification	Race	2014	2015	2016	2017	2018
Doctoral degrees	African	179	166	210	223	226
	Coloured	5	5	9	4	12
	Indian	12	13	12	9	8
	White	69	50	59	52	62
	No information	3	1	6	1	6
Total		268	235	297	289	314



Qualification	Race	2014	2015	2016	2017	2018
Master's degrees	African	658	635	715	696	707
	Coloured	40	32	47	24	23
	Indian	83	74	79	52	63
	White	229	177	177	155	155
	No information	20	18	15	4	8
Total		1030	936	1033	931	956

Table 5: Master's and doctoral graduations by gender, 2014 to 2018

Qualification	Race	Gender	2014	2015	2016	2017	2018
Doctoral degrees	African	Female	54	45	63	72	66
		Male	125	121	147	151	160
	Coloured	Female	1	3	6	2	5
		Male	4	2	3	2	7
	Indian	Female	7	8	2	7	6
		Male	5	5	10	2	2
	White	Female	28	25	32	32	36
		Male	41	25	27	20	26
	No information	Female	0	1	1	0	0
		Male	3	0	5	1	6
Total			268	268	296	289	248
Master's degrees	African	Female	289	287	301	333	348
		Male	369	348	414	363	359
	Coloured	Female	19	21	27	15	12
		Male	21	11	20	9	11
	Indian	Female	49	46	47	29	37
		Male	34	28	32	23	26
	White	Female	136	96	98	79	91
		Male					
	No information	Female					
		Male					



Qualification	Race	Gender	2014	2015	2016	2017	2018
		Male	93	81	79	76	64
	No information	Female	4	8	5	0	5
		Male	16	10	10	4	3
Total			1030	936	0	931	956

National Research Foundation rating and evaluation

The National Research Foundation (NRF) evaluation and rating system judges the standing of individuals on the basis of their research outputs. In this respect it differs from often used rating and ranking systems that judge the standing of individual publications (impact factors) or the university in its entirety (university rankings).

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 four main rating categories:

- **A rating:**

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.

A1 A researcher in this group is recognised by all reviewers as a leading scholar in his/her field internationally for the high quality and wide impact (i.e. beyond a narrow field of specialisation) of his/her recent research outputs.

A2 A researcher in this group is recognised by the overwhelming majority of reviewers as a leading scholar in his/her field internationally for the high quality and impact (either wide or confined) of his/her recent research outputs.

- **B rating:**

Researchers who enjoy considerable international recognition by their peers for the high quality and impact of their recent research outputs.

B1 All reviewers are firmly convinced that the applicant enjoys considerable international recognition for the high quality and impact of his/her recent research outputs, with some of them indicating that he/she is a leading international scholar in the field.

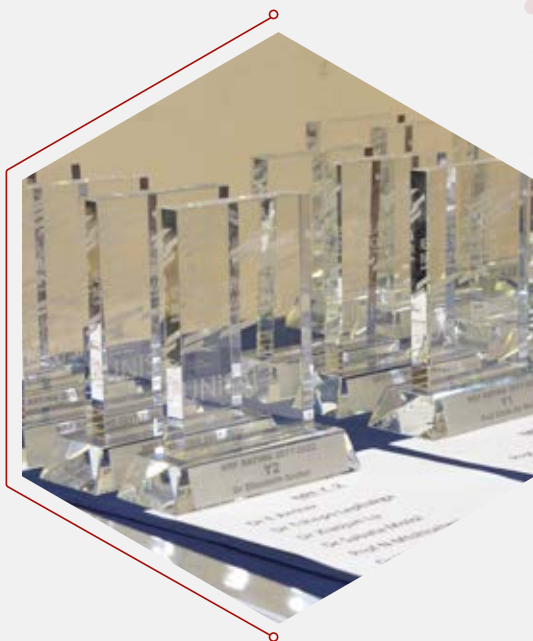
B2 All or the overwhelming majority of reviewers are firmly convinced that the applicant enjoys considerable international recognition for the high quality and impact of his/her recent research outputs.

Most of the reviewers are convinced that the applicant enjoys considerable international recognition for the high quality and impact of his/her recent research outputs.





National Research Foundation rating and evaluation Continued



- **C rating:**

Established researchers with a sustained recent record of productivity in the field and who are recognised by their peers as having:

- » produced a body of quality work, the core of which has coherence and attests to on-going engagement with the field
- » demonstrated the ability to conceptualise problems and apply research methods to investigating them.

C1 All of the reviewers are firmly convinced that the applicant is an established researcher as described and who, on the basis of the high quality and impact of his/her recent research is regarded by:

Some reviewers as already enjoying considerable international recognition
or

The overriding of reviewers as being a scholar who has attained a sound/solid international standing in their field, but not yet considerable international recognition
or

The overriding majority of reviewers as being a scholar whose work focuses mainly on local and/or regional issues and who as a scholar at a nationally leading level has substantially advanced knowledge and understanding in the field by contributing to new thinking, a new direction and/or a new paradigm.

C2 All of the reviewers are firmly convinced that the applicant is an established researcher as described. The applicant may, but need not, enjoy some international recognition for the quality and impact of his/her recent research outputs.

C3 Most of the reviewers concur that the applicant is an established researcher (as described).

- **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 postdoctoral careers.

Y1 A young researcher (within 5 years from PhD) who is recognised by all reviewers as having the potential (demonstrated by research products) to establish him/herself as a researcher with some of them indicating that he/she has the potential to become a future leader in his/her field
or

A young researcher (within 5 years from PhD) who is recognised by all or the overwhelming majority of reviewers as having the potential to establish him/herself as a researcher of considerable international standing on the basis of the quality and impact of his/her recent research outputs.

Y2 A researcher in this group is recognised by all or the overwhelming majority of reviewers as having the potential to establish himself/herself as a researcher (demonstrated by recent research products).



A total of 41 NRF-rated awards including new, re-rated and researchers who joined with **a rating** were made in 2018.

NRF-rated research awards

This figure consists of 10 Y-rated researchers, 20 C-rated researchers and 1 A-rated researcher. At the end of 2018, Unisa had a total of 231 rated researchers.

Table 6: Academics who were newly rated, re-rated, or who joined Unisa with a rating in 2018

Title	Name	Surname	College		Status
Prof	Alan	Weinberg	Research	A2	Re-rating
Prof	Madelene	De Jong	CLAW	C1	New
Prof	Patrick	Ngulube	SIRGS	C1	Re-rating
Prof	Izak	Spangenberg	CHS	C1	Re-rating
Prof	Barry	Ackers	CAS	C2	New
Prof	Rachel	Barker	CHS	C2	Re-rating
Prof	Mokhotjwa	Dhlamini	CSET	C2	Re-rating
Dr	Emile	Doungmo Goufo	CSET	C2	New
Prof	Hugo	Lotriet	CSET	C2	Re-rating
Prof	Marilyn	Naidoo	CHS	C2	New
Dr	Abdulrafiu	Raji	CGS	C2	New
Prof	Rene	Van Eeden	CHS	C2	New
Prof	Zenghui	Wang	CSET	C2	Re-rating
Prof	Kobus	Wessels	CEMS	C2	Re-rating
Prof	Wilhelm	Wessels	CHS	C2	Re-rating
Prof	Malose	Mphahlele	CSET	C2	Re-rating
Prof	Johannes	Vorster	CHS	C2	New
Dr	Shadrack	Katuu	CHS	C3	New
Prof	Moritz	Braun	CSET	C3	Re-rating
Prof	Chaka	Chaka	CHS	C3	New
Prof	Christopher	Enweremadu	CSET	C3	New
Prof	Elelwani	Farisani	CHS	C3	New



Title	Name	Surname	College		Status
Prof	Marisa	Keuris	CHS	C3	Re-rating
Prof	Elmarie	Kritzinger	CSET	C3	Re-rating
Dr	Gilbert	Motsaathebe	CHS	C3	New
Prof	Godwell	Nhamo	CEMS	C3	New
Prof	Hester	Nienaber	CEMS	C3	New
Dr	Samuel	Oloruntoba	TMALI	C3	New
Dr	Makgetlaneng	Sehlare	CGS	C3	Transferred with a rating
Prof	Breggie	Van der Poll	CSET	C3	Rerating
Dr	Hans-Georg	Wüinch	CHS	C3	New rating
Dr	Clayton	Bhonday	CSET	Y2	New
Dr	Ngonidzashe	Chimwani	CSET	Y2	New
Dr	Eileen	Donaldson	CHS	Y2	New
Dr	Elnerine	Greef	CHS	Y2	New
Prof	Ashley	Gunter	CAES	Y2	New
Dr	Ntanganedzeni	Mapholi	CAES	Y2	New
Dr	Morgan	Ndlovu	CHS	Y2	New
Dr	Nampombe	Saurombe	CHS	Y2	New
Prof	Yoladi	Slabbert	CHS	Y2	New
Prof	Fanie	Van Zyl	CLAW	Y2	New





Researchers of excellence

Whether intrigued by the Romantic "rebel" poet Shelley or fascinated by nanophosphors, Unisa allows its researchers the space to follow their research passions.



Professor Alan Weinberg

From "naive" junior lecturer to top-rated researcher

A rebel who defied convention and rejected the monarchy, Percy Bysshe Shelley was a poet whose place among the major English Romantic poets was more grudgingly given than most. As Unisa Professor Emeritus Alan Weinberg puts it, England "will never forgive him" for his non-conformist ways.

"Shelley is still not fully accepted in England, so you always feel you have to try and speak for him to correct the marginalisation," says Weinberg, an A2-rated researcher who has been studying the brilliant but wayward poet and his work for over 40 years.

This odyssey started at Unisa's English Department in 1970, when Weinberg joined the university as a "naïve and innocent" temporary junior lecturer with only an honours degree. "It was an extremely good department with very high standards, and that is where I learnt everything," he says.

That included learning the fundamentals of doing research – even though research was a word barely mentioned at Unisa in the 1970s and 1980s and no one considered it important to write research articles.

Lecturing paved the way

"Teaching was everything," says Weinberg. "As lecturers, we were always interacting with students; taking their calls, marking in detail and giving a lot of assistance and support. We also did a lot of reading and wrote many tutorial letters because we took pride in changing the assignments.

"Writing those tutorial letters was an individual process – nobody helped you write it up – and that was where I learnt how to go about research. The draft was scrupulously critiqued and several revisions were required before it was ready for sending. No language errors was the unshakeable rule. Much the same applied to study guides."

Other important stepping stones in the unfolding of his research career were his master's and doctoral studies. "My doctorate took a long time; 10 years. That would never be allowed today," Weinberg says. In mitigation, he explains that, apart from a doctoral thesis being "terribly difficult" to write, Unisa academics in those days received no time off – not one free day – for their doctoral theses.

Promotion was also a good deal slower than today: Weinberg completed his doctorate in 1987 but remained a senior lecturer in the English Department for another four years before he was finally offered an associate professorship.

In the meantime, Macmillan in London had agreed to publish his doctoral thesis on Shelley's Italian experience as a book, which was well received by Shelleyan scholars around the world. Weinberg also pulled off an academic coup by organising the International Bicentenary Shelley Conference at Unisa in 1992.



That was a good rating for a first effort and it had a profound effect on me. I felt my work was being acknowledged by my immediate peers and colleagues."



Researchers of excellence - Continued

Not long afterwards, Weinberg found himself in the Bodleian Library at the University of Oxford in England, transcribing Shelley's original manuscripts. These of course were written by the poet's own hand, in ink. "It was wonderful," he says. "There were the little ink blots and lots of scratching out. You can't get closer to an author than that."

Two published volumes on Shelley came out of this work, followed by a collection of essays on unfamiliar aspects of Shelley's work, in collaboration with UK scholar Timothy Webb of Bristol University.

Profound effect of NRF rating

In 2004, someone suggested he apply for an NRF rating. "I applied and then forgot about it completely until I got the letter that I had received a B rating. That was a good rating for a first effort and it had a profound effect on me. I felt my work was being acknowledged by my immediate peers and colleagues."

When Weinberg applied again in 2010/11, he received an A2 rating, which he received again in 2018 when he was re-rated.

All told, he has authored or co-authored six books and about 40 peer-reviewed articles in very "respectable" journals (usually international ones), received awards such as the Unisa Chancellor's Prize and been an active member of the Academy of Science of South Africa (ASSAf) and the Keats-Shelley Society in the United States and Rome. Weinberg has also chaired and served on the NRF's Panel for Literature, Language and Linguistics.

What matters most to him, however, is his writing. "For me, the most important thing is whether or not I have been able to express myself well. I don't believe in plain speech, which can be dull, but in writing cogently, succinctly, elegantly and with style. That is not easy."

Helping to rewrite SA law on family dispute resolution



Professor Madelene de Jong

When Professor Madelene "Leentjie" de Jong heard she had received a C1 rating on her first application to the National Research Foundation, her husband, who is not in academia, expressed sympathy.

"He looked at the C and felt sorry for me because he thought it was a very low rating," explains de Jong, a family law expert at the College of Law. It was only later, while attending Unisa's annual research and innovation awards ceremony, that her husband realised a C1 rating was actually one of the highest ratings being recognised that evening.

De Jong's C1 rating, awarded in 2018, is arguably one of the two biggest highlights of her 29-year career as a Unisa academic. The other is the culmination of what she refers to as "her life's work" – the part she has been playing in reforming South Africa's adversarial family dispute resolution laws.

In South Africa up to now, divorce and other family disputes, such as care and contact matters, have tended to be conflict ridden, often fought in the courts where opposing sides do their utmost to discredit each other.

"But with families the aim should be to reach a negotiated solution that is best for everyone," says de Jong. "Alternative dispute resolution is the only way to go, especially when children are involved and the parents need to have an ongoing relationship."

Mediation is one of the most effective ways to resolve family disputes peaceably and to the mutual benefit of all parties, says de Jong, who for the past three years has been actively involved in ensuring that mediation takes its rightful place in the country's legal framework for family dispute resolution.

In 2016, the then Minister of Justice and Constitutional Development appointed her to two advisory committees of the South Africa Law Reform Commission, namely the Advisory Committee on Family Dispute Resolution: Care of and Contact with Children and the Advisory Committee on the Review of the Maintenance Act (which de Jong leads).

The work of both committees is expected to result in important legal changes in the form of amendments to the Maintenance Act and, in the case of family disputes, an entirely new Act on alternative dispute resolution in family matters. Work on the latter is already well under way, with a discussion paper on family dispute resolution launched on 5 November 2019 for public comment.

The discussion paper, which draws heavily on the mediation research de Jong has done over the years, is a crucial step in making new law. For de Jong, being part of a process that will ultimately help families in distress settle disputes peacefully and constructively, is an honour and a privilege. "This is my passion. It has been my life's work to get mediation on the map."



Researchers of excellence - Continued



Professor Mokhotjwa Dhlamini

Keep aiming for the next level

Prof Mokhotjwa Dhlamini has gone from thinking he was far behind in terms of meeting the Y2 NRF rating requirements as an emerging researcher in 2012 to being recognised as a C2-rated researcher in 2018. A full professor in the Department of Physics under the College of Science, Engineering and Technology, Prof Dhlamini has always sought to improve his rating after obtaining a Y2. "I can now see the steps that can assist me in building my research profile to meet the next level."

His research focuses on down-converting and up-converting nanophosphors for possible applications in biological imaging, solar cells and optical refrigeration/cooling.

Being rated can assist in building a research profile and providing access to NRF funding which can be used for research projects and financial support for students. It also serves as a promotion criterion for institutions such as Unisa.

Dhlamini's NRF rating has played a major role in his promotions. When he started as a Y-rated researcher, he was a senior lecturer and was then promoted to associate professor and later to a full professor.

The NRF rating has guided him in terms of the quality of his research and he says it was satisfying to see his research impact and quality recognised at that level.

"Being recognised as a C2-rated researcher means that I have done enough with regards to the local impact of my research; I am encouraged to continue in strengthening my international research collaborations and impact.

"An NRF rating forces one to dig deeper into your research activities to inform the research community and poses a challenge to you to reach more findings and eventually be recognised as an A researcher."

Not content with this leap from Y2 to C2, Dhlamini also received CEO Global's Pan African Titans Building Nations Award 2018 in the education category.



I can now see the steps that can assist me in building my research profile to meet the next level."



Dr Nampombe Saurombe

NRF rating earned less than 18 months after PhD

For many researchers, a realistic timespan for earning an NRF rating is four or five years after completing their doctorates. It took Dr Nampombe "Namps" Saurombe less than 18 months.

Saurombe, a Y2-rated researcher and senior lecturer in Information Sciences at Unisa's College of Human Sciences, attributes her rapid progress to two main factors: the "gift of time" Unisa gave her through the Academic Qualifications Improvement Programme (AQIP) and the insistence of her supervisor, Professor Patrick Ngulube, that she write and publish articles while studying.



Researchers of excellence - Continued

"He said, 'We are not going to wait until you graduate to publish papers. Go to conferences and publish.' He wanted quality and he really pushed me, and I appreciate it now and see why he did it. Publishing papers and articles while doing my doctorate made my NRF application easier."

AQIP is a research support programme that enables successful applicants to do their doctoral studies full time, secure in the knowledge that a temporary replacement will handle their lecturing responsibilities while they are away.

"As any academic knows, when you are lecturing and have a family, your studies always come last. I cannot begin to explain how helpful it was to have the gift of time to complete my doctorate," says Saurombe, whose research interest is archives on the African continent.

Her PhD study entailed a multi-method research approach that included interviewing the national archivists of 12 Southern and East African countries and preparing a framework to market the services of archives among a variety of different audiences, including children. "When you catch them early, kids quickly learn the skills they need to find information. It's a skill for life."

No sooner had she graduated in 2016 than Saurombe started preparing her application for her first NRF rating. "With a Y rating, the NRF gives you the opportunity to show your potential to do further research. I was in the fortunate position of having a publishing history and a lot of support from the College of Human Sciences in preparing my NRF rating application."

Two days before giving birth to her third child, Saurombe sent in her NRF application. In August 2017, she received the good news that her application had been successful.

Two months after that, she received an invitation from the International Council on Archives to become part of their Expert Group on Research Services and Outreach. "I never knew I could reach that far so soon," she says.

"I am very, very grateful to Unisa, to the College of Human Sciences and to the Information Science department. Their support – and the gift of time to complete my doctorate – made all of this possible, along with the support from my family. I am truly blessed."



As any academic knows, when you are lecturing and have a family, your studies always come last. I cannot begin to explain how helpful it was to have the gift of time to complete my doctorate," says Saurombe



[BACK TO CONTENTS](#)



Research Programmes and Grants

03



Unisa is one of the few South African universities to invest in its researchers. It does this through a range of innovative research support programmes. The tables below highlight the total number of internal grants awarded in 2018, the uptake on each programme by researchers and the uptake per gender¹.

Master's and Doctoral Support Programme (MDSP)

Unisa crafted the Master's and Doctoral Support Programme (MDSP) in response to the shortage of fulltime equivalent (FTE) researchers, which is made obvious through the annual science indicator published by the Department of Science and Technology. 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 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 1: MDSP grants, 2014 to 2018

	2014	2015	2016	*2017	*2018
Master's and Doctoral Support Programme (MDSP)	88	67	49	30	38 (M-18; D-20)
Black	40	38	30	21	24
White	34	26	16	8	11
Coloured	3	1	1	0	0
Indian	11	2	2	1	3

*Amount allocated: R378 000



Dr Nico Booyse

Research support at Unisa leaves no one out

Coming from teaching, where educators are lucky to be given a day off to do their writing for a master's degree, Dr Nico Booyse was pleasantly surprised by the extensive support Unisa offers to staff doing master's or doctoral studies.

Still, for a long time he ignored the calls to apply for the Master's and Doctoral Support Programme (MDSP). "The invitations always indicated that the programme was intended to support transformation, so I thought I would be wasting my time," says Booyse, a senior lecturer in the Department of Management Accounting in the College of Accounting Sciences.

After a research colleague told him that he was just as eligible for the MDSP as anyone else, he applied and was accepted.

As writing was not his strong suit, Booyse decided to enrol for a master's degree at North-West University, where the management accounting programme was predominantly academic. "Accountants are used to doing calculations; we are not people who want to write essays," he explains.

As things turned out, writing could not be avoided after all: he still had to write a mini-dissertation on his topic, "Performance management at public schools". Fortunately, Unisa offers an array of workshops to assist its staff with their academic writing skills, and Booyse attended them diligently. "If I had known what support I would get from Unisa, I would have gone for the full dissertation," he says.

After completing his master's studies, Booyse moved on to a PhD, building on the school performance management theme of his master's studies. He applied for MDSP support in the final year of his doctorate, using the funding provided to pay for costs such as language editing, interview translation and transcription.

"I also took 11 months of research and development leave for my PhD," he says, comparing this generous allocation with the almost non-existent support he would have received as a high school teacher. "I taught Accounting, Business Economics, IT and Computer Science for 20 years, and in all those years I wanted to do a master's degree but never had the time to do it. There is a lot of support for researchers at Unisa. All we have to do is use it."



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Marc Mukendi Mpanda

Mathematician sets out to describe the dynamics of share prices

As South Africans know all too well, the financial markets can be volatile. Still, Unisa mathematician Marc Mukendi Mpanda believes that with the right mathematical tools, it should be possible to model the behaviour of stock exchanges, bond markets and the like.

For his PhD studies, he is working on a fractional volatility model that will be implemented by using a computer programming language to analyse the all-share index of the Johannesburg Stock Exchange. Given all the ups and downs of the index, predicting stock prices is a major challenge for the country's financial services industry – which is exactly why Mpanda, a lecturer in the Department of Decision Sciences in the College of Economic and Management Sciences, chose this as the topic for his doctoral thesis.

"In my literature review, I looked at where the gaps and challenges are, and where I can add," he says. "Also, I like a challenge and to work on things that are new and different and have never been published before."

Mpanda says he has had strong support for his studies from his supervisors and the Department of Decision Sciences, not to mention the Master's and Doctoral Support Programme (MDSP).

"Through the MDSP, I am attending online training, workshops and conferences in quantitative finance given by experts via webcast. For me, this is a really good experience," he says. "It has enabled me to get in touch with people all over the world in my field, which is helping me a lot."

He commenced his PhD studies in March 2017 and is planning to submit his thesis in 2020, having already written three chapters. In the meantime, Mpanda is also hard at work writing research articles and planning more, so that by 2022, he will have enough of a publications track record to apply for a rating from the National Research Foundation (NRF).

Throughout his doctoral studies, he has continued to work full time, mostly working on his PhD research in the evenings and on weekends. "Doing research requires hard work and a lot of time and attention, and some other things have to be sacrificed, but it is worth it."



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Postdoctoral Fellowship Support Programme (PFSP)

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.

The advancement of these fellows is seen as essential not only in terms of their own individual training, but also 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.

Table 2: Participants in the PFSP, 2014 to 2018

	2014	2015	2016	2017	*2018
Postdoctoral Fellowship Support Programme	75	122	107	103	95
Black	38	86	70	79	78
White	9	18	14	9	5
Coloured	7	4	4	3	5
Indian	21	14	19	12	10

*Amount allocated R14 800 000

Emerging Researcher Support Programme (ERSP)

In South Africa, highly productive researchers are an ageing cohort. The National Survey of Research and Experimental Development cite that the levels of fulltime equivalent (FTE) researchers in South Africa are dwindling at 1.8% per 1 000 total in the National System of Innovation. To some extent this picture is also reflected by Unisa's profile of academic staff members holding doctoral qualifications.

The Emerging Researcher Support Programme (ERSP) is Unisa's response to the challenges posed by a shortage of FTE researchers and a stagnating total research output. The goal of this competitive programme is to help permanent research staff who have completed their doctoral degrees in the last five years to develop as researchers, and to increase their measurable research output in order to eventually obtain a National Research Foundation rating. The support programme does so by providing funding for research expenses, relief lecturers and bursaries for postgraduate students.

Table 3: Participants in the ERSP, 2014 to 2018

	2014	2015	2016	2017	*2018
Emerging Researcher Support Programme	5	5	1	No new grants awarded in 2017	No new grants awarded in 2018
Black	1	4	1		
White	4	1	0		



VisionKeepers Programme (VKP)

Goal 1 of the Unisa Research Strategy is to increase innovative research and research capacity. The VisionKeepers Programme (VKP) is a research excellence capacity development initiative, managed by the Research Department to strengthen research and scholarship at Unisa. As the university currently faces the major challenge of attracting, developing and retaining young researchers, the goal of the VKP is to support the development of highly competent and confident young researchers who have solid research plans.

The main objectives of the VKP are to

- address the problem of the 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 research published by Unisa researchers
- increase the number of researchers at Unisa with National Research Foundation ratings

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

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

Table 4: Participation in the VKP, 2014 to 2018

	2014	2015	2016	2017	*2018
VisionKeepers Programme (VKP)	11	7	7	4	8
Black	5	6	1	3	5
White	2	1	0	1	1
Indian	0	0	0	0	2

*Amount allocated: R3 525 000



Academic Qualification Improvement Programme (AQIP)

The goal of the Academic Qualification Improvement Programme (AQIP) is to enable Unisa's permanent academic staff to pursue senior qualifications (master's and doctoral degrees) on a fulltime basis. This competitive programme complements one of the goals of both the Department of Higher Education and Training and Unisa, namely to develop staff towards the attainment of doctoral qualifications. The biggest challenge facing higher education institutions, including Unisa, is the inability to fund academic staff members' study leave. AQIP is a response to this challenge.

Table 5: Participation in AQIP, 2014 to 2018

	2014	2015	2016	2017	*2018
Academic Qualification Improvement Programme (AQIP)	62	45	Due to budget having been fully allocated, the programme was provisionally put on hold for new applications until funds become available.	No new grants awarded in 2017	32 (M-3; D-29)
Black	38	30			21
White	19	14			8
Coloured	1	0			2
Indian	4	1			1

*Amount allocated R74 538 516

Visiting Researcher Programme (VRP)

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

Table 6: Participation in the VRP, 2014 to 2018

	2014	2015	2016	2017	*2018
Visiting Researcher Programme (VRP)	35	31	19	12	23

*Amount allocated: R7 569 053

Due to the international nature of this programme, South African racial classification is not applicable.



Research Professors Programme (RPP)

Unisa introduced the academic rank of Research Professor to serve as a mechanism for, among other things, increasing dedicated research and innovation participation, increasing specialised expertise and improving research outputs. Research Professors are appointed in three-year cycles. The table below indicates participation in the Research Professors Programme from 2014 to 2018.

Table 7: Participation in the RPP, 2014 to 2018

	2014	2015	2016	2017	*2018
Research Professors Programme	3	2	19	4	6 In Process (to be approved at ManCom in Jan 2019)
Black	0	1	2	2	1
White	3	1	17	2	5

**Awarded for a three-year cycle. Amount allocated: R600 000*

Innovation Support Programme (ISP) for staff

The aim of the Innovation Support Programme (ISP) for staff is to stimulate innovative research through seed funding. The programme provides funding to researchers to develop research projects that offer innovative solutions to the challenges that society faces and in so doing strengthen their ability to apply innovative problem-solving techniques to research problems and to increase the number of high-quality innovative research projects.

Table 8: Participation in the ISP, 2014 to 2018

	2014	2015	2016	2017	*2018
Innovation Support Programme (ISP) for staff	10	4	4	5	3
Black	5	2	1	2	2
White	5	2	3	2	1
Indian	0	0	0	1	0

**Amount awarded: R100 000*

**Note: Figures provided by the Directorate: Innovation, Technology Transfer and Commercialisation*



Professor Lukas Snyman



The Thermal Energy RoofTop system

Big ideas have power

South Africa has more solar energy per square metre than anywhere else except Arizona in the United States of America, and yet load shedding and power interruptions are the order of the day. Unisa Professor Lukas Snyman and his students have patented a solar thermal energy system that goes further than existing systems in collecting, storing and harnessing the sun's rays for household heating. Self-sufficiency and significant savings for South African households are the likely benefits.

The invention, known as the Thermal Energy RoofTop system, is the brainchild of Snyman and his team from the Department of Electrical Engineering in the College of Science, Engineering and Technology (CSET). It has successfully been through the South African patenting process and been awarded seed funding through the Technology Innovation Agency (TIA).

Snyman's innovative spirit in the energy field has also seen him receiving an Innovation Support Programme grant from Unisa.

All this is paving the way for commercialisation of a low-cost system that households could use to generate all their hot water for bathing, showering, cleaning and clothes washing, and even for cooling purposes.

Basically, the RoofTop invention employs physics, materials and electronics to utilise the full solar energy spectrum that shines down on South African rooftops, including energy that would usually go unused.

Catching all those rays

Most solar energy systems use the ultraviolet and visible region of the spectrum, which has the highest energy density. However, 50% to 60% of solar incident energy (the energy that actually reaches rooftops) lies in the so-called "long" wavelength or thermal energy wave region. This energy is largely unused by current silicon solar panels and is radiated back to the atmosphere each day and especially at night.

Instead of silicon, the Unisa RoofTop solution consists of a combination of standard household galvanised roof sheeting and a system of black polyethylene piping, together with a smart electronic control system that maximises the total solar energy absorption on household rooftops.

By fully harvesting the energy "budget" available from the sun, consumers can save or conserve millions of kilowatt hours each month.

The current RoofTop system prototype has a collection capacity of almost 10 kilowatt hours per day – even in winter – working out at about 200 kilowatt hours a month. If the collection area is doubled from the current 4 x 4 metres to 8 x 8 metres, the user could easily save between R800 and R1 000 a month on Eskom electricity.

The potential cost savings are substantial. The Unisa team's latest research shows that, taking into account the initial capital outlay and a system lifetime of 10 years, the operation cost of the system comes in at about 12 cents per kilowatt hour. This compared to the R2 per kilowatt hour, excluding VAT, that consumers currently pay to Eskom.

The research team is currently developing further add-on systems that could save the consumer even more money per month.



By fully harvesting the energy "budget" available from the sun, consumers can save or conserve millions of kilowatt hours each month.



Innovation Challenge for Students

The Innovation Challenge for Students develops and nurtures innovative student research projects. Unisa's aim is to attract, develop and retain young researchers that have the capacity to conceive and execute innovative research projects. The initiative is targeted at registered Unisa students who have the capacity to conceive innovative solutions to the challenges that society faces. The programme provides seed funding for registered students for proof of concept of novel or innovative solutions to research problems.

Table 9: Participation in the Innovation Challenge for Students Programme, 2014 to 2018

	2014	2015	2016	2017	*2018
Innovation Challenge for Students	4	2	3	3	8
Black	4	1	3	3	8
White	0	1	0	0	0

*Amount awarded: R160 000

*Note: Figures provided by the Directorate: Innovation, Technology Transfer and Commercialisation

Entrepreneurial students use technology to tackle high textbook costs

Industry after industry is being disrupted by youthful entrepreneurs with a flair for technology, and the textbook industry is no exception. Three young South Africans, two of whom are Unisa students, have started an online textbook bartering exchange intended to make prescribed textbooks more affordable for university students.

Branded "BartersConner", it is believed to be the first textbook-trading exchange of its kind and could drastically reduce the cost of acquiring textbooks, says Thabang George Mofokeng, a Unisa BCom Economics student from Mamelodi, Pretoria, who co-founded the exchange with Unisa law student Tebogo Ramabe and an IT specialist, Gift Mogeni, who is not part of the university.

Mofokeng successfully pitched the idea to the adjudicators of Unisa's 2018 Innovation Challenge, an annual competition run by the Directorate: Innovation and Technology Transfer to inspire Unisa students to find innovative solutions to pressing societal problems. His prize included a trip to Brazil to meet and exchange ideas with young entrepreneurs, as well as grant funding to start bringing the textbook bartering platform.

"The idea is that people moving to the next phase of their studies can pass their books on to other students and receive their next set of books from students ahead of them," says Mofokeng. "Once we get this right, we can

help a lot of people." Mofokeng, Ramabe and Mogeni started working on the BartersConner platform in earnest in November 2018 and were on track to launch a beta version of it in January 2019, in time for the start of the first semester.

Students will have the option to use the BartersConner services on a free account, which will have certain limitations, or choose a full-service account where they would be required to pay a small subscription fee. This would be a negligible price to pay compared to the cost of buying new textbooks, says Mofokeng.

An important feature of the exchange is that no money will change hands. The barter system's business model makes use of custom-designed digital credits called "Mofi credits". These have no monetary value and are used simply as the medium of exchange, giving textbook owners peace of mind that any offer made for their books is genuine.

As a BCom Economics student who has studied the causes and effects of the 2008 financial crisis, Mofokeng is convinced that the barter system has huge potential. "Barter could bring some stability into people's lives and help provide a cushion against the ups and downs of the traditional financial system."



Thabang George Mofokeng (left) and Tebogo Ramabe



Open Distance Learning Research Support Programme (ODL-RSP)

The ODL-RSP provides support to ODL researchers towards the development and improvement of their research capacity and skills to increase skills transfer, research quality and capacity building and to encourage professional development in ODL research at Unisa. Ultimately, the programme aims to support permanent employees to produce accredited ODL research outputs and to mentor, support and develop junior researchers in the ODL-RSP group. An increase in the number of permanent employees producing quality ODL research publications not only contributes to the achievement of Unisa's Research and Innovation strategy targets, but also supports researchers in becoming recognised and proven ODL researchers.

Table 10: Participation in the ODL-RSP, 2014 to 2018

	2014	2015	2016	2017	*2018
Open Distance Learning Research Support Programme (ODL-RSP)	3	2	1	1	4
Black	2	0	1	1	3
White	0	2	0	0	0
Coloured	1	0	0	0	1

*Amount allocated R1 570 000

Women in Research (WiR) programme

The purpose of the Women in Research (WiR) programme is to support women researchers who wish to undertake high-quality collaborative research projects. The programme provides research support funds to WiR groups and not to individual projects. This programme directly supports the transformation agenda of the university.

Table 11: Participation in the WiR programme, 2014 to 2018

	2014	2015	2016	2017	*2018
Women in Research (WiR)	3	2	16	10	5
Black	0	1	4	7	2
White	3	1	12	1	2
Coloured	0	0	0	1	0
Indian	0	0	0	1	1

*Amount allocated R2 210 000



Women's Awards for Excellence in Research

The Women's Awards for Excellence in Research are presented annually to active and deserving Unisa women researchers. Awarded in three categories, these awards are aimed at increasing and strengthening the participation of women in research at Unisa in response to the University's Research and Innovation Strategy.

Women in Research: Emerging Researcher Award

The Women in Research Emerging Researcher Award is presented to women staff members who have in the last five years have advanced their careers by acquiring a doctorate as well as producing research outputs.

Table 12: Women in Research: Emerging Researcher Awards, 2014 to 2018

	2014	2015	2016	2017	*2018
Women in Research: Emerging Researcher Award	1	1	2	2	2
Black	0	1	1	1	1
White	1	0	1	1	1

**Amount awarded per award: R10 000*



Dr Rehana Cassim

Practice of company law built a strong research foundation

Delinquent company directors have been in the news in South Africa and so has company law expert Dr Rehana Cassim, whose commentary on the dispute between Old Mutual and its twice-dismissed CEO Peter Moyo has been covered in the mainstream media.

“Once the Moyo case is concluded, I will look at writing something more academic on the matter,” says Cassim, a senior lecturer in the Department of Mercantile Law in Unisa’s College of Law and winner of a 2018 Women in Research Emerging Researcher Award.

Not that her existing body of work lacks academic gravitas. Among other things, Cassim has co-authored four textbooks on company law (two of them while completing her LLD thesis in 2018 on the removal of company directors from boards).

Quoted by the courts

One of these books, *Contemporary company law*, has been particularly successful. It has been quoted many times by the High Court and the Supreme Court of Appeal, and is held in the prestigious Library of Advanced Legal Studies in London, as well as in other overseas law libraries.

Several of her journal articles have been cited in High Court judgments and referred to in South African and international journals, and the University of Johannesburg is using her loose-leaf book chapter in a book aimed at legal practitioners and chartered secretaries to develop one of its short courses.

In yet another highlight, well-known English judge Lady Mary Arden mentioned Cassim by name and quoted from one of her textbooks in a public lecture at a Department of Trade and Industry symposium.

There is more to come, bearing in mind that Cassim is a latecomer to academia. Although she had her first taste of research while clerking for former Constitutional Court judges Albie Sachs and Zak Yacoob in 2001, she then became a practising attorney at Bowman Gilfillan in Sandton.

That exposure to the practical side of company law has proved useful as a university researcher. “I can relate my research to what happens practically,” says Cassim, whose research interest is company law focusing on director misconduct, accountability of boards, the removal of directors and the piercing of the corporate veil (referring to situations where directors lose their limited liability and are held personally liable for their conduct).



Several of her journal articles have been cited in High Court judgments and referred to in South African and international journals.

Her heart lies in academia and research

She left the firm to take a lecturing post at Wits University from 2007 to 2009, then went back to practice, this time at a Pretoria-based firm Rooth and Wessels Attorneys. Then, finally deciding that her heart lay in academia, Cassim joined Unisa as a senior lecturer in 2013, when her research career began in earnest – as her Women in Research award shows.

Three aspects of her research earned her this award, she believes. One is the quality of her research, as evident in the High Court and Supreme Court of Appeals citing her work.

A second is her mentoring of junior researchers in the Department of Mercantile Law. She has recently co-published an article with one of the junior colleagues in her department in a relatively high-ranking journal.

The third is that Cassim is an active participant in the College of Law’s community engagement flagship on Street Law. Noticing that there was no business-related topic in the flagship, she introduced a new topic on business entities and becoming a successful entrepreneur. The idea underlying this topic is to empower communities to start and run basic businesses.

Commenting on the value the Women in Research programme adds to Unisa’s research efforts, Cassim says, “Yes, I do think it’s necessary. It is challenging for a female academic to maintain a healthy work-life balance, and Women in Research motivates and encourages women to achieve their research goals.”



Emerging researcher achieves 670 downloads and counting



Dr Sin-Yu Ho

Having a research article published in an international journal and downloaded over 670 times in one year would be a career highlight for most seasoned researchers. For an emerging researcher, such exposure is almost unheard of.

Dr Sin-Yu Ho, Senior Lecturer in the Department of Economics, and winner of a 2018 Women in Research Emerging Researcher Award, was not expecting to achieve such a high number of downloads, nor to win a prestigious 2018 Emerald Literati Award, for an article she had submitted to the internationally accredited journal *Studies in Economics and Finance*.

However, she does have a fairly good idea why her paper, "Determinants of stock market development: a review of

the literature", has proven so popular among economics researchers internationally.

"A literature review is really hard work and people can easily determine whether you have done thorough research or not. I reviewed over 100 articles for my review," said Ho, whose research career is just 10 years old – the length of time she has been with Unisa's College of Economics and Management Sciences.

Highly ranked for economics research

This success is not the only milestone she has reached to date. Ho is ranked in the top 23% of economists in South Africa and in the top 12% in Africa. This is according to Research Papers in Economics (RePEc), an international repository containing the work of 50 000 economists around the world.

She has so far published 25 articles in various accredited journals, presented at two international conferences and written one book chapter.

Twelve of her articles have appeared in international journals published by Emerald, Inderscience, Springer, Taylor & Francis, and Wiley. Furthermore, she has been invited to serve as a reviewer by a number of accredited international journals such as *African Development Review*, *Economic Modelling* and the *International Journal of Finance and Economics*, among others.

Research interest sparked at Unisa

Ho started her academic career at the University of Hong Kong and moved to South Africa to join Unisa as a lecturer in 2009. That was where her interest in research was awakened.

"Unisa and its environment give me the scope and support to conduct research. Because I manage my time well, I always find time to do research," says Ho. "Back in Hong Kong, I taught for six hours a day, which was exhausting. Conducting classes is labour-draining while research is brain-draining."

This is why she schedules her research for first thing in the morning, when her mind is fresh and it's easier to connect to the latest developments in the global financial markets. She highlights the similarities between the JSE and the Hong Kong Stock Exchange (one of the top 10 in the world). The JSE lists business for neighbouring countries, as the Hong Kong Stock Exchange also does for China. "This activity has boosted the standing of both economies," Ho points out.

The ability to make connections between Asia and Africa is fuelling her career growth. Expect to hear more from and about this emerging researcher in future.



Unisa and its environment give me the scope and support to conduct research. Because I manage my time well, I always find time to do research."



Women in Research: Leadership Award

This award is presented to women researchers who in the last five years have demonstrated outstanding leadership in research. Over and above producing high level research outputs in prestigious journals and books, they must have supervised a substantial number of master's and doctoral students to completion, mentored young academics, led research groups, and be regarded by their peers as leaders in their disciplines.

Table 13: Women in Research: Leadership Awards, 2014 to 2018

	2014	2015	2016	2017	*2018
Women in Research: Leadership Award	4	2	2	3	2
Black	4	1	2	2	1
White				1	
Indian		1			1

*Amount awarded per award: R20 000



Professor Memory Tekere

The fascinating world of microorganisms

Holding a C3 rating from the National Research Foundation and having won the 2018 Women in Research Leadership Award, Professor Memory Tekere is set to drive change in environmental science and environmental and applied microbiology.

Her passion for microorganisms in the environment, their diversity and beneficial bio-potential applications in industry and their betterment of the environment has driven her research on environmental microbiology.

Based in the Department of Environmental Sciences, College of Agriculture and Environmental Sciences, Tekere has published 53 peer-reviewed publications to date; 28 of these journal articles have appeared in the International Scientific Indexing (ISI) indexed journals. She has supervised three PhD students and 18 MSc research students.

"My research in environmental microbiology and biotechnology, pollution and remediation provide unique contributions through new discoveries and understanding of diversity and the occurrence of different microorganisms in different environments, their ecology and bio potential applications," she says.

Through research, Tekere will continue to charter new territory in microbiology. "Omics and bio applications hold the key to my future research as we continue to discover unique diversity of microorganisms in different unique environmental settings, understanding their functions, processes, bio products and bio-applications."



Omics and bio applications hold the key to my future research as we continue to discover unique diversity of microorganisms in different unique environmental settings, understanding their functions, processes, bio products and bio-applications."



Professor Shivani Bhardwaj Mishra

Conserving two precious commodities: time and water

While it is her research on wastewater treatment that has earned her over 2 200 citations and numerous awards in the past five years, including a 2018 Women in Research Leadership Award, Professor Shivani Bhardwaj Mishra has another exceptional talent: the ability to manage time. Every minute is accounted for and every activity carefully planned to make maximum use of a resource that is almost as precious as water.

Excellent time management is the only way that Mishra, a Professor at the Nanotechnology and Water Sustainability Research Unit NanoWS, is able to do justice to so many different demands – her own research and teaching duties, postgraduate student supervision, membership of various scientific organisations and, last but not least, family.

A firm believer in proactive planning and meticulous organisation, she has a plan for each day, for each student and for each project. “When you have a proper plan, you can get everything done properly,” she says.

The results of this approach to time speak for themselves. Since completing her PhD in Organic Chemistry in 2002, Mishra has published over 85 articles in accredited international journals, written more than 40 book chapters and received approximately R3 million in research grant funding. A C2-rated scientist, she is also a Fellow of the Royal Society of Chemistry, a Fellow of the International Congress of Environment Research and a member of scientific bodies such as the American Chemical Society.

Then there are her family responsibilities. Mishra is married to fellow NanoWS researcher, Professor Ajay Mishra, with whom she frequently co-supervises and co-publishes. The couple have two daughters, Anchal and Akriti.

One of the qualities that earned Mishra the Women in Research Leadership Award for 2018 was her ongoing contribution to developing and mentoring young researchers. She almost always participates actively in her students’ research projects and co-publishes articles with them, rather than observing and critiquing from a distance.

“It is very important to be involved with our students’ work and research publications. If we do not contribute ourselves and know the details, how are we going to speak about the work on international platforms? People will laugh!” Mishra says.

She is one of a select group of Unisa researchers who received not one but two research awards from the university in 2018 – her Women in Research Leadership Award and a second award for improving her National Research Foundation rating from C3 to C2.

Mishra says it never occurs to her when she is working that this might bring her awards and recognition. “As researchers, we just try our best to be capable and efficient, because we need to perform. But when it happens and there is recognition, it is very motivating and encouraging. It inspires us.”



A firm believer in proactive planning and meticulous organisation, she has a plan for each day, for each student and for each project.



Women in Research: Leadership Award

The Youngest Female Doctoral Award is presented to the youngest woman staff member to attain a doctoral degree during the previous year's graduation ceremony.

The award reflects the importance of increasing the number of women doctoral graduates and emphasises how many of them have completed this advanced degree.

Table 14: Women in Research: Youngest Female Doctoral Awards, 2014 to 2018

	2014	2015	2016	2017	*2018
Women in Research: Youngest Female Doctorate Award	1	1	1	1	1
Black	1	0	1	0	0
White	0	1	0	1	1

*Amount awarded per award: R5 000



Dr Catherine le Roux

Only the end result counts in the all-or-nothing doctoral game

"With a doctorate, there are no small wins. You have nothing until it is over and you get your results. That is why doing a doctorate can't be for anyone but yourself," says Dr Catherine le Roux, Unisa's youngest PhD graduate of 2018.

A Senior Lecturer in Strategic Management at the Department of Business Management, she completed her doctorate at the age of 30, driven by a topic she loves and doing the kind of research she loves.

For her PhD thesis, she explored the embeddedness of sustainability in management decision-making. "I started with this topic in my master's, which is when I found my love for research and the topic," says Le Roux. "For me, it's the type of research I do – which is qualitative – and the people aspect that I enjoy, engaging with companies and corporations in face-to-face, in-depth interviews."

Sustainability taking shape

Her research helped shape the sustainability approach of the corporation she focused on for her doctorate, Growthpoint Properties. More companies could benefit as her research findings are potentially transferable. "I feel I can make a difference," Le Roux says.

Her research journey with Growthpoint started with her master's in 2011 and finally ended in 2018. "It was an amazing journey. The work was exhaustively detailed and there were many, many hours of interviews, workshops and various other engagements. Researchers often struggle to get access to organisations, but this one has a very transparent culture. They were even open to discussing what wasn't working." Le Roux, intent on exploring the finest detail of sustainability embeddedness in Growthpoint, saw how its approach to sustainability evolved over the years. While sustainability was initially seen as the responsibility of one unit or person, its view became much broader. "At the end of the research, I saw that sustainability was everyone's job. It was embedded."



“The hardest thing I’ve ever done”

While Le Roux thrived on the work, it was also “by far the hardest thing I have ever done. It is so difficult to operate at the level required for doctorateness,” she says. “When you run and get tired, you’ve got to push on. This is mental fitness. When my mind felt like it had reached its threshold and capacity, I would challenge it to go further. I told my mind to ‘find the answer’ and to ‘figure this out’. It took focus and commitment but I grew a lot throughout the process.”

Being on Unisa’s Academic Qualifications Improvement Programme (AQIP) was a major advantage as she was able to pursue her PhD studies full time.

“There is a debate about whether postgraduate students should be working and doing a doctorate. I felt that I needed to focus on my studies full time. It was a privilege to have had the dedicated time to do single-tasking and to not be interrupted.

That is when you can do deep thinking and the continuity you get is so special,” Le Roux says, adding that she used “every minute of those three years. I grew in self-discipline. I have proved to myself that I can work autonomously and deliver high-quality research”.



At the end of the research, I saw that sustainability was everyone’s job. It was embedded.”

External grants

In its 2016 – 2020 Research and Innovation Strategy; the Research, Postgraduate Studies, Innovation and Commercialisation Portfolio has prioritised the mobilisation of external research grants as one of its performance measures.

External grants strengthen the research portfolio and increase the number of master’s and doctoral degrees amongst staff and students. In addition, these grants support productivity with regard to research projects at Unisa. External grants also encourage networking and collaborations for research.

Table 15: Overview of 2018 research grants

Core NRF Grants	NRF Rated Incentives	Other external Grants	GRAND TOTAL
R44 790 472	R5 796 000	R 57 455 871	R102 246 443
244	197	88	529



Table 16: NRF grants 2018

Programme	Number	Awarded
Academic Statistics Programme	1	250 000
Black Academics Advancement Programme	1	293 200
Competitive Programme for Rated Researchers	12	2 512 848
Competitive Support for Unrated Researchers	7	1 161 979
DST- NRF Fellowships for Early Career Researchers from the UK	1	165 000
DST-NRF Conference Fund	1	500 000
ESRC/NRF Higher Education In Africa	1	706 000
Human and Social Dynamics in Development	3	539 140
IRG - France / South Africa Research Cooperation Programme	1	100 000
IRG - Italy / South Africa Research Cooperation Programme	1	100 000
IRG - Namibia / South Africa Research Cooperation Programme	1	162 164
IRG - National Natural Science Foundation of China / NRF Research Cooperation Programme	2	1 090 498
IRG - Oman/South Africa Research Cooperation Programme	4	670 000
IRG - Taiwan / South African Research Cooperation Programme	1	144 000
Knowledge Interchange and Collaboration	29	671 884
Research Development Grants for Y-Rated Researchers	5	50 000
Research Equipment Programme	1	34 000
S&F - Collaborative Postgraduate Training	3	1 935 000
S&F - Desmond Tutu Training Grants	2	240 000
S&F - DST / NRF Innovation Postdoctoral Fellowships	3	915 000
S&F - Extended support for scholarships and fellowships	7	720 000
S&F - Innovation Doctoral Scholarships	45	4 710 000
S&F - Innovation Honours Grants	2	4 500 000
S&F - Innovation Masters Scholarships	26	1 845 000
S&F - NRF Free-standing Postdoctoral Fellowships	1	200 000
S&F - NRF/DAAD Scholarships	1	80 000
S&F - NRF-TWAS African Renaissance PhD Fellowship Programme	5	600 000



Programme	Number	Awarded
S&F - NRF-TWAS Postdoctoral Fellowship Programme	2	610 000
S&F - Part time Doctoral Scholarships	3	330 000
S&F - Research Career Awards	1	450 000
S&F - Research Development Grants for nGAP Scholars	3	130 000
S&F - SANHARP	1	1 200 000
S&F - Scarce Skills Development Fund	1	2 280 000
S&F - Scarce Skills Doctoral Scholarships	16	1 590 000
S&F - Scarce Skills Masters Scholarships	4	360 000
S&F - Scarce Skills Postdoctoral Fellowships	3	405 000
S&F - Scholarships	17	2 610 000
SA Research Chairs - Open	4	3 360 000
Thuthuka	22	773 759
Total	244	38 994 472
Incentive Funding for Rated Researchers	197	5 796 000
Grand Total	441	44 790 472

Table 17: Other external grants 2018

Other External Programmes		
Dept, Fund: ABEERU	1	298 035
Dept Fund: DESTEA Market Access Research Project	1	169 303
Dept Fund: Matthew Goniwe School of Leadership & Gove	1	8 933 400
The Innovation Hub Management Company	1	46 200
	1	1 966 583
Dept, Fund: Business Management Chairs	1	3 882 992
Dept Fund: External Actions of the European Union	1	301 785



Other External Programmes		
Dept Fund: External Actions of the European Union - DHET	1	14 794
Dept Fund: OWSD Postgraduate Fellowship	1	126 000
NIHSS Grant - Puleng Segalo (Pathway Project)	1	132 000
Dept Fund: NIHSS - M Z Phiri	1	210 000
Research Department	1	270 000
Dept Fund: Sasol Grant	1	620 000
Dept Fund: Sasol Grant - D S Dlamini	1	750 000
Dept Fund: WRC - Chemistry Research	1	12 500
Dept Fund: Conference Account for Dept of Mathematics	1	747 430
Dept Fund: WRC NOM - NanoWS	1	120 000
Dept Fund: WRC - Ajay Mishra	1	2 100
Dept Fund: NanoWS Lab Income - Research Facility	1	571 930
Dept Fund: NIPMO Capacity Development Grant	1	1 246 000
TIA Seed Fund		
	20	20 421 052
DHET contribution		
Accademic Qualification Improvement Programme	60	32 234 919
NRF mentoring programme	8	4 800 000
	68	37 034 919
Total:	529	102 246 443

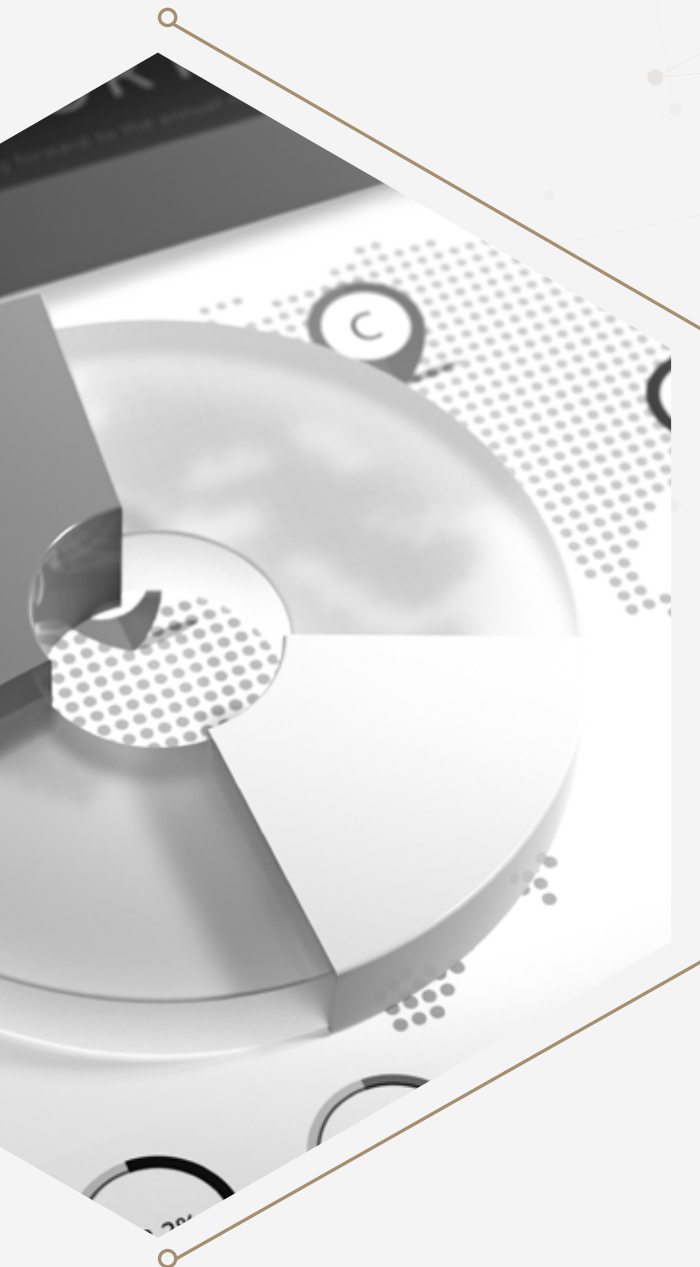


[BACK TO CONTENTS](#)



Research Niche Areas

05



INTRODUCTION

Unisa has identified five research niche areas on which to concentrate its research efforts and resources. Drawing on the particular research strengths of the university and its researchers, these areas focus on the challenges facing South Africa and the rest of the continent and lend themselves to transdisciplinary and multidisciplinary research.

There are five broad niche areas:

-  Knowledge generation, dissemination, application and human capital development in response to the current and future societal and stakeholder 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
-  Knowledge generation and the application of best practices in open, distance and e-learning (ODEL)

The pages that follow contain examples illustrating the kind of research conducted under the respective research niche areas.



NICHE AREA 1

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

The advent of the global knowledge economy and the Fourth Industrial Revolution (4IR) has driven home the importance of ensuring that South Africa and the African continent have the skills to generate knowledge and innovations that enable African solutions to African concerns and developmental challenges. Africa-focused research is intrinsically multidisciplinary, transdisciplinary and interdisciplinary, drawing as it does from various related disciplines, from the arts and astronomy to law, health sciences, geography and education. Thus, research in this niche area favours collaboration across disciplines and institutions.

Learners the first to experience the benefits of biogas

There is a compelling case to be made for using renewable energy sources instead of fossil fuels, but convincing communities to make that change can be a challenge. What better way to demonstrate the benefits of alternative energies than to have the support of the people most likely to embrace innovation – the youth?

This was the thinking of the Unisa Institute for the Development of Energy for African Sustainability (IDEAS) and the student organisation Engineers without Borders. Their renewable energy research has been enthusiastically received by learners at the Elethuthemba Combined School near Jackson informal settlement in the south of Johannesburg.

Most of the 1 600 learners at the school, which is non-fee-paying, live in or near the informal settlement. If they see and experience the benefits of using alternative energies such as biogas, they could become excellent ambassadors for change in their communities, says Kamogelo Sehoole, a BSc honours student in chemical engineering and member of Engineers without Borders.

She, her fellow students and staff from IDEAS came up with the idea of holding a “cook-off”, where teams of learners in Grades 10 and 11 would take part in a cooking competition, using conventional liquid petroleum gas (LPG) and biogas made from cow manure so that comparisons could be made.

The cook-off was held in April 2018 at the Unisa Institute for Social and Health Sciences (ISHS), where IDEAS has built a working biodigester that produces biogas in the form of high-quality methane for cooking, heating and lighting. This is part of the community energy village constructed at the site to enable people from local communities to experience biogas and other renewable energy solutions for themselves. The learners’ verdict was that biogas is just as good – if not better – for cooking than LPG.



Triumph Devotion: the winning team



At first, I didn’t trust it but as time went by, I saw that it was faster than LPG. It was a very good experience,” says Simphiwe Sibanda, one of the young chefs in the winning team, named “Triumph Devotion.”



Learners the first to experience the benefits of biogas (continued)

Cooking against the clock

"There were six teams and each team received R150 to buy ingredients for a dish of their choice. Half the teams cooked with biogas and the other half with LPG, and they all had only 30 minutes to produce their dishes," says Sehoole.

"We cooked spaghetti, mince and mixed vegetables, using the biogas," says Buyiswa Ntuli, also a member of the winning team. "The gas worked very well. It was fast and safe, and worked like a stove, but quicker. The heat was not excessive but it was enough. We managed to finish our dish in 25 minutes, including the preparations."

Baldwin Tawodzera, whose team made chicken schnitzel with spaghetti, said his team had also cooked with biogas. "It was easy and faster than electricity and also faster than LPG. The cook-off was fun and exciting, and I learnt a lot."

Commenting on the cook-off, Dr Celestin Sempuga of IDEAS, said, "Our first cook-off was a great success. It was intended to give hands-on experience to the learners to whom we have been talking about sustainable and affordable energy. We have been training the learners how to design, install and maintain a biodigester. The goal is to have the learners install one at their school as substitute for LPG that the school kitchen is currently using."





NICHE AREA 2

The promotion of democracy, human rights and responsible citizenship

The relevance of this niche area is obvious considering the colonial history of Africa generally and the apartheid past of South Africa in particular, where human rights were routinely violated, and democracy was hard won and is now held dear. These legacies continue to cast their shadow on the continent and country through racism, xenophobia, the erosion of the rule of law, corruption and the many inequalities in education, income and access to services. Just a few of the concerns this niche area is intended to address are support for free and fair elections, media freedom, freedom of expression and other human rights, including the right to education. One element that is coming increasingly to the fore as a result of the increase in corruption in South Africa is the importance of ethical leadership and responsible citizenship.

Distance learning not immune to gender-based violence

The assumption that gender-based violence does not happen at open and distance learning institutions such as Unisa may be flawed. These institutions are not necessarily exempt from the phenomenon, especially given the proliferation of social media and the fact that, despite the dominance of asynchronous learning, some level of personal interaction is inevitable.

"People assume that Unisa is different from contact universities but this is not necessarily so in the context of gender-based violence," says Professor Deirdre Byrne, Associate Professor of English Studies and leader of a research team studying the prevalence of gender-based violence at Unisa. "Staff and students use social media a lot, making it easier to know where others are, and there is always some level of direct contact. Owing to unemployment, an increasing number of students are studying full time and can be found in our libraries and study centres."

The three-year project, running from 2017 to the end of 2019, is being funded through a Unisa Women in Research (WiR) grant. For this project, 20 student fieldworkers were recruited to conduct door-to-door interviews at university facilities across the country.

"We received over 1 000 applications for 20 fieldworker positions and were able to select really good candidates," says Byrne. "Most of the fieldworkers were fourth-year Social Work students, while the others were students majoring or doing their honours in Psychology or Criminology, or had completed Lifeline courses."

Byrne says that as gender-based violence is a sensitive issue, all the fieldworkers received intensive training in how to approach and interview participants. The fieldworkers then conducted a total of 136 in-depth interviews with Unisa students and staff in the Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and the Western Cape.

All participants signed consent forms and the interviews were recorded, Byrne says, adding that ethical clearance for the project was obtained in 2016. Her fellow project team members are Fiona Mahlori, a student health and wellness practitioner, Stanley Namakhota of the Sociology Department and Lungisa Mabude.



Professor Deirdre Byrne



Distance learning not immune to gender-based violence (*continued*)

Preliminary findings

Although the data gathered is still being analysed, the Gender-based Violence Project has already revealed some preliminary trends that warrant closer attention.

"The student data indicate that a lot of students have reported feeling unsafe in areas near our campuses, such as taxi ranks," Byrne says. "We also have data showing that Unisa staff in our regional office in Durban feel unsafe in some of their interactions with student leaders."

These initial trends signal that gender-based violence is not a phenomenon Unisa can afford to overlook. "Numerous campaigns against gender-based violence are under way at contact universities in South Africa, and Unisa should also be at the forefront in raising awareness about gender-based violence," says Byrne.

Meanwhile, the project team has also conducted a pilot study among Unisa staff, seeking to establish their knowledge, attitudes and experiences of gender-based violence. This e-mail study, sent to the university's approximately 5 000 employees, elicited only 43 responses.

"Most respondents showed a knowledge of what gender-based violence is, including its verbal, economic, sexual and physical forms," Byrne says. "Most also say it is very seldom they have heard of such things at Unisa. We found the low rate of response quite interesting and think it is linked to the low rate of reporting. Clearly, there is room for further research."



Most respondents showed a knowledge of what gender-based violence is, including its verbal, economic, sexual and physical forms.



NICHE AREA 3

Innovation and capacity building in science and technology

South Africa is a major importer of electronics, computer software and hardware, medical equipment and machinery, among other things, and has a low rate of entrepreneurship and innovation, a shrinking manufacturing sector and a scarcity of skills in science, engineering and technology. These detract from the country's international competitiveness and its ability to create jobs and address poverty and inequality. Unisa is highly regarded for its research and capacity building efforts in nanotechnology, water treatment, waste-to-energy conversion and the use of information and communication technologies (ICTs) for development, to mention a few areas relevant to this niche area. Researchers have access to excellent facilities and equipment at the ultra-modern, custom-built Science Campus in Florida, Gauteng.

Anti-cancer research projects ready for pre-clinical and clinical stages

Over 115 000 South Africans are diagnosed with cancer each year, but the impact of the disease goes further than that, affecting one in four people through the diagnosis of friends, families or colleagues. Unisa researchers, building on years of painstaking work on the connections between glucose and cancer, are at the centre of two major collaborative anti-cancer studies being launched in South Africa.

"So far, most of the work has been done on cell cultures in the laboratory. Now we are preparing for pre-clinical and clinical work, involving animals and people, respectively," says Professor Monde Ntwasa of the Biotechnology Department at Unisa's College of Agriculture and Environmental Sciences.

One project is for the further development of a drug to help alleviate some of the side-effects of chemotherapy, particularly the debilitating fatigue that many cancer patients experience. The other project will track the impact of diet on the treatment and recovery of cancer patients at one of South Africa's biggest academic hospitals, Chris Hani Baragwanath in Johannesburg.

The drug pipeline project is an extension of the intensive research Ntwasa has been conducting with fruit flies and cell cultures in the laboratories at Unisa's Science Campus in Florida, Gauteng. This work is now going forward in collaboration with North-West University's (NWU's) Preclinical Drug Development Platform, which is the only facility in South Africa with Good Laboratory Practice (GLP) certification.



Professor Monde Ntwasa

“

We are collaborating on a drug discovery project involving a drug compound which subverts the progress of cancer cells but protects normal cells."



Anti-cancer research projects ready for pre-clinical and clinical stages *(continued)*

Ntwasa and the lead NWU researcher on the project, Professor Anne Grobler, have worked together before as co-holders of a South African Research Infrastructure Roadmap (SARIR) Chair of the Department of Science and Technology.

A memorandum of understanding (MoU) with the NWU is being prepared, and the process of applying for ethical clearance has been initiated. Once that has been granted, the project will commence, subject to the availability of funding.

Fundraising and the ethical clearance process are also under way for the second anti-cancer project, a collaboration between Unisa and the University of the Witwatersrand that will bring together a multidisciplinary team of experts in oncology, biotechnology, palliative care, dietetics and even information technology. They will be investigating the impact of glucose from food on the treatment and recovery of more than 380 cancer patients at Chris Hani Baragwanath Academic Hospital.

Ntwasa says similar studies have been conducted in continental Europe, where researchers have concluded that dietary sugar fuels the progress of cancer, but very little research has been done on the diet-cancer link in a South African context, where diets are highly diverse.

Cancer is a growing problem in South Africa and Africa more broadly, and the more knowledge that can be generated about the disease in relation to local lifestyles and conditions,

the greater the prospects of effectively preventing and treating it. Studies such as the two in which Unisa is collaborating have the potential to add meaningfully to anti-cancer efforts in Africa.

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“

So far, most of the work has been done on cell cultures in the laboratory. Now we are preparing for pre-clinical and clinical work, involving animals and people, respectively.”





Economic and environmental sustainability

South Africa and many other African nations are some of the most unequal societies in the world, with great wealth co-existing alongside extreme poverty and income disparities being the order of the day. Inequality threatens not only the social fabric of African countries but also the environment through the depletion of forests, water, plant and animal life as impoverished people desperately try to make a living. There is also an overreliance – in South Africa especially – on the use of fossil fuel to generate electricity, resulting in pollution hotspots. Similarly, rapid urbanisation is fuelling a waste management crisis and water pollution and scarcity are widespread. Then there is the scourge of corruption and poor governance, which deters investors and erodes business and public confidence in economies. All these challenges underline the need for research into economic activity that incorporates the environmental, social and governance (ESG) imperatives.



Professor Leslie Brown

How death feeds life in the wild

When a wild animal dies in nature, the ripple effect on the entire ecosystem is potentially vast, affecting the soil, soil microbes, invertebrates, vegetation, insects, birds, small mammals, predators and scavengers. The question is: do these deaths enrich the environment or degrade it and, if the latter, how, and how long do the effects last?

Says Professor Leslie Brown, head of the Applied Behavioural Ecology and Ecosystem Research Unit (ABEERU) at Unisa's

College of Agriculture and Environmental Sciences: "Our hypothesis is that the effect of carcass decomposition would be enriching because nutrients would be going back into the environment but extremely few studies have been done in this field. There has been similar research in Europe but only single projects. No one has done research on this scale, and certainly not in Africa."



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How death feeds life in the wild *(continued)*

Brown and Dr Haemish Melville are leading a multidisciplinary team from Unisa, Birdlife Africa, Rhodes University, the Durban Natural Science Museum and the KwaZulu-Natal Museum in a carcass decomposition project that is investigating the holistic effects of carcass decomposition on life in the wild.

The findings could be extremely useful for the conservation community in nature reserves across Africa. "When we start understanding the cycles that take place in nature, we can make more scientifically informed management decisions," Brown says.

This could include more informed decisions about the effect of culling and hunting on the environment.

The setting for the study is ABEERU's Telperion research facility in the grasslands of Mpumalanga outside the town of Bronkhorstpruit. It is home to a diversity of wildlife, including small predators such as jackal, brown hyena and leopard.

The project consists of 15 experimental sites: five control sites with nothing on them, five experimental sites each containing a carcass and five sites with carcasses in cages so that other animals and birds of prey cannot reach them.

"In this way, we will be able to compare the movement of animals at the different sites, as well as the impact on

vegetation and how long those effects last," says Brown, whose own research interest is plant ecology. Just one of the many possible effects he will be investigating is whether carcass decomposition improves the veld or degrades it, such as through trampling and increases in nutrients in the soil.

Other researchers on the team have expertise in soil, soil invertebrates, birds and small mammals, including bats, insects, ungulates and mammalian predators. Six postgraduate students are on the team, which also involves two Unisa staff members doing their doctorates.

The first research findings are expected around April 2020 but the research will continue long after that, expanding later into different ecosystems, such as arid areas and bushveld, along different temperature and rainfall gradients.

As work progresses, the team will also be investigating the effects of different sizes of carcasses on the ecosystem. "What happens, for instance, when rhinos are poached, or elephant?" asks Brown.

The answers could be critical in securing the future of Africa's wildlife, big and small.



When we start understanding the cycles that take place in nature, we can make more scientifically informed management decisions."



The setting for the study is ABEERU's Telperion research facility in the grasslands of Mpumalanga with its rich diversity of wildlife



NICHE AREA 5

Open and distance learning

Unisa was the first university in the world to teach exclusively by distance education mode, giving it a head start in the evolution towards becoming a leading open, distance and e-learning (ODEL) institution. ODeL research is focused predominantly on finding ways to improve student success across academic disciplines and to increase student access to tertiary education. This goes hand in hand with a strong emphasis on harnessing new and emerging information and communications technologies (ICTs) to propel the university and its students into the digital future.



Professor Ashley Gunter

International distance students in Africa are engaged and motivated, study shows

One of the biggest research studies conducted to date on Unisa's international distance education students in major African markets has shown that most students are engaged and motivated – not just about their studies but also about contributing their skills and knowledge to the development of the African continent.

"We wanted to know, among other things, if students were intending to join the brain drain. Our findings support students not leaving the continent but rather looking to upskill where they are," says Associate Professor Ashley Gunter of Unisa's

Geography Department and joint principal investigator of the study, entitled International Distance Education and African Students (IDEAS).

The other principal investigator was Professor Parvati Raghuram, Director of the OpenSpace Research Centre at Open University UK. Team members were academics and postdoctoral associates from the Open University UK, University of Leicester, Wits University and Rhodes University, with Unisa represented by Gunter and Professor Paul Prinsloo, Research Professor in Open Distance Learning.



We wanted to know, among other things, if students were intending to join the brain drain. Our findings support students not leaving the continent but rather looking to upskill where they are."



International distance students in Africa are engaged and motivated, study shows *(continued)*

1 800 students in four countries

Approximately 1 800 Unisa students in Namibia, Nigeria, South Africa and Zimbabwe participated in the 30-month study, which focused on students of the sciences, technology, engineering and mathematics. Its aim was to investigate students' experiences of studying through Unisa and find ways to improve the quality of support available to them.

Grant funding for the study totalled R10 million and came from the UK's Newton Fund and Economic and Social Research Council and South Africa's National Research Foundation.

Starting in mid-2016, a team of 12 researchers conducted 180 face-to-face interviews and received 1 700 online survey questionnaires. The research covered four main areas: study trends and habits among the participating students; how well adapted the students were based on a Student Adaptation to College questionnaire; the potential for adapting UK learning design materials for African conditions; and student migration and post-study intentions.

One of the most important findings was that the students generally were doing well and were well adjusted. "We have hard data showing that the international students who participated in our project are engaged, proud and happy to be part of Unisa," Gunter says, adding that this finding was a "pleasant surprise" as the international literature indicates that international distance education students tend to feel isolated and alienated.

A huge incentive for many students is that they do not have to travel frequently or far to further their studies through Unisa. "Unisa's reach into Africa is really contributing to the service of humanity," he says, pointing to the lack of opportunities for higher education in some of the countries surveyed. "In Nigeria, there are hundreds of universities but they receive two million applications a year and the acceptance rate is only 2%."

Other factors motivating African students to choose Unisa were value for money and the high standard of education that Unisa offers, he says.

Challenges revealed

While Unisa is generally highly regarded among participating students, the study also pinpointed some challenges, such as the fact that there is a lag of three weeks on average between the time students register and the time they actually go online.

Another concern is that international students sometimes find it difficult to navigate Unisa's administrative processes, including registration, and often turn to "proxies" living in South Africa to help them.

Gunter says the study has produced a treasure trove of data about students' study habits, attitudes and challenges. This data will not only inform possible improvements to the scope and quality of student support at Unisa but will be open to the public from April 2020 via Unisa's Institutional Repository and the Open University UK's data platform.





[BACK TO CONTENTS](#)



Enabling Research

06



Unisa Press

Unisa Press, the largest academic publisher on the African continent, supports Unisa's research and innovation strategy by disseminating knowledge and research outputs that reflect the five research niche areas of the university. The Press's output of high-quality scholarly journals and books has been increasing steadily over the past few years, as has the publication download rate, reflecting growing interest in its offerings.

Journals published

Unisa Press published 44 scholarly journals in 2018 and co-published number of others with Routledge Taylor and Francis. The journals disseminate high-quality research work in a variety of disciplines, including humanities, developmental studies, decolonisation, African philosophies and renaissance, education, economics and open and distance learning (ODL).

In all, 100 issues of the 44 journals were published, an increase of 22% compared to 2017. The number of downloads per month increased from 750 in February 2018 to 1 865 in December 2018.

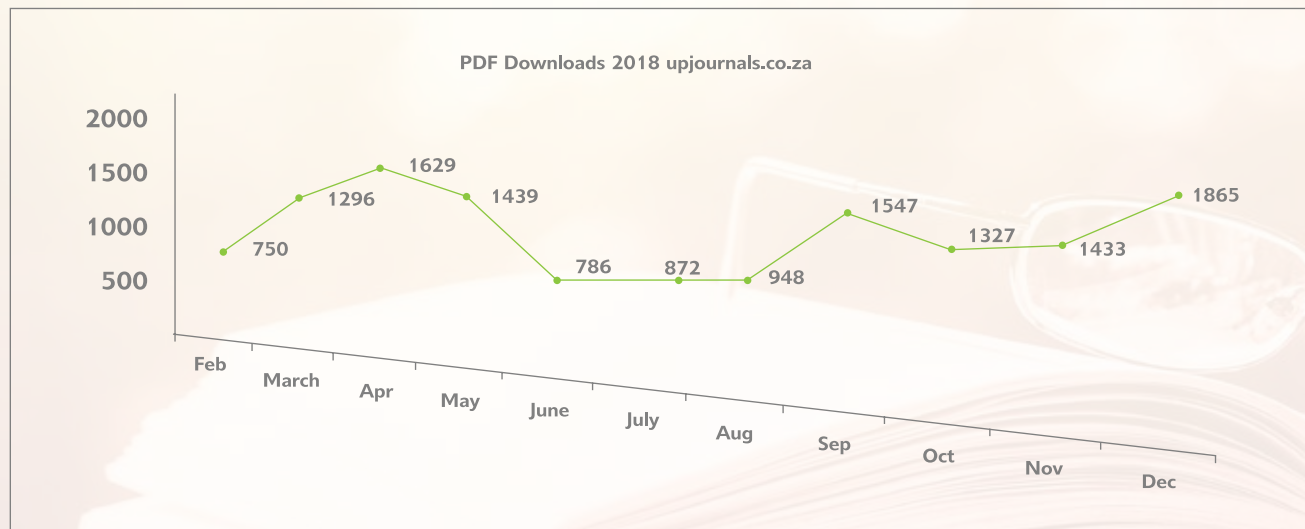


Figure 1: Unisa Press PDF downloads 2018





Books published

Original scholarly works of merit that address topical issues touching the lives of people on the African continent were again the focus of Unisa Press's book-publishing effort.

The book output of Unisa Press was significantly higher in 2018 than in 2017. In all, 16 scholarly books, including commissioned work, were published, compared to the 11

books in the previous year. Some of these books offered fascinating insights into contemporary topics such as *Africa and her animals*, waste management and land issues through the lens of Eastern Cape dynamics and politics. Others explored various historical topics such as the life and literature of Tiyo Soga, 19th century African intellectual, and the Khoisan language of the early Cape. In honour of Unisa's 125th anniversary, the Press published *Unisa 1873-2018: The making of a distance university*.

The 2018 selection of 16 books has increased the total number of works in the Unisa Press collection to 174. An important characteristic of the 2018 books was the relatively strong representation of female authors, in line with a decision taken in the previous year to solicit manuscripts and proposals from female authors.

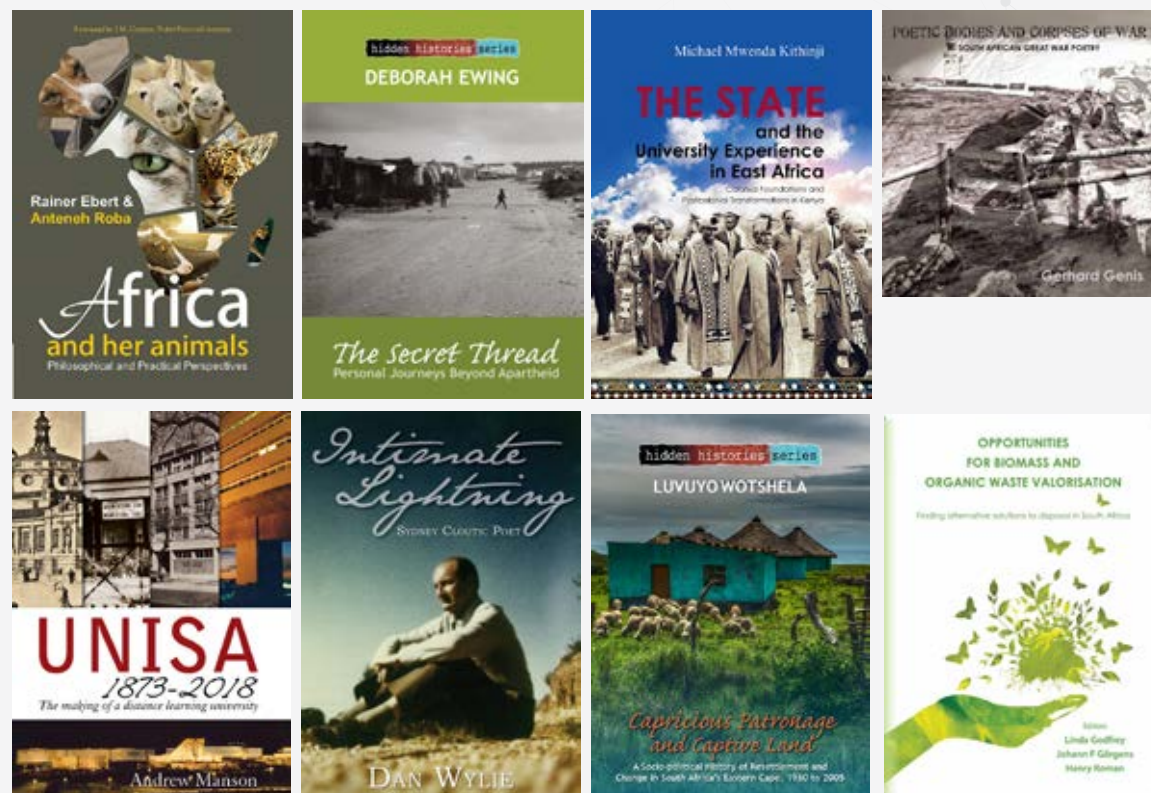


Table 1: Unisa Press PDF downloads 2018

Books published in 2018	Author(s)
<i>Africa and her animals</i>	Anteneh Roba and Rainer Ebert
<i>Unisa 1873-2018: The making of a distance learning university</i>	Andrew Manson
<i>The secret thread</i>	Deborah Ewing
<i>Intimate lightning</i>	Dan Wylie
<i>The state and the university experience in East Africa</i>	Michael Mwenda Kithinji
<i>Capricious patronage and captive land: A socio-political history of resettlement and change in South Africa's Eastern Cape, 1960-2005</i>	Luvuyo Wotshela
<i>Poetic bodies and corpses</i>	Gerhard Genis
<i>Opportunities for biomass and organic waste valorisation: Finding alternative solutions to disposal in South Africa</i>	Linda Godfrey, Johann F Görgens and Henry Roman



Books published in 2018	Author(s)
<i>Tiyo Soga: A literary history</i>	Joanne Ruth Davis
<i>And we forgave them</i>	Lillian T Moufhe and Ndanganeni P Phaswana, with Michael O'Loughlin
<i>Claude E. Ake: The making of an organic intellectual</i>	Jeremiah O. Arowosegbe
<i>Bishop Siggibo Dwane</i>	PT Mtuze
<i>Managing security information: Incidents, threats & vulnerabilities</i>	Doraval Govender
<i>Authenticity on the postmodern stage: Betrayal, the real thing and closer</i>	Lida Krüger
<i>Kora: A lost Khoisan language of the early Cape and the Gariep</i>	Menándu Plessis
<i>Queer Kinship: South African perspectives on the sexual politics of family-making and belonging</i>	Tracy Morison, Ingrid Lynch and Vasu Reddy



Professor Chris Swanepoel

2018 Hiddingh-Currie Award

The 2018/19 Hiddingh-Currie Award, presented annually to encourage and nurture specialised skills in academic research and scholarly publication, was awarded for two books. These were *Violence in Schools: South Africa in an international context* by Clive Harber and Vusi Mncube, and *Chaka: Die nuwe Afrikaanse vertaling* by Chris Swanepoel. Both books were published in 2017.

Continued growth

It is encouraging to see that despite budgetary constraints, the journal and book output of Unisa Press has increased for two consecutive years. This has gone hand-in-hand with the deepening of the Press's policy to publish material that changes people's lives and triggers wider debates on the contentious issues raised. Apart from covering topics pertinent to the people of Africa, the Press is making a concerted effort to publish work on ODL research, while diversifying the book-publishing programme to offer print and select online options and giving priority to the open-access framework for books and journals. In this way, Unisa Press is broadening its distribution footprint, optimising costs and increasing accessibility and reach.



College of Graduate Studies

The College of Graduate Studies (CGS) continues to play a crucial role in supporting Unisa's efforts to increase the number of master's and doctoral graduates and to provide support in training high-calibre researchers. Multi-, inter- and transdisciplinary research is at the core of all its activities, thereby providing a unique range of opportunities for master's and doctoral research under high-quality supervision.

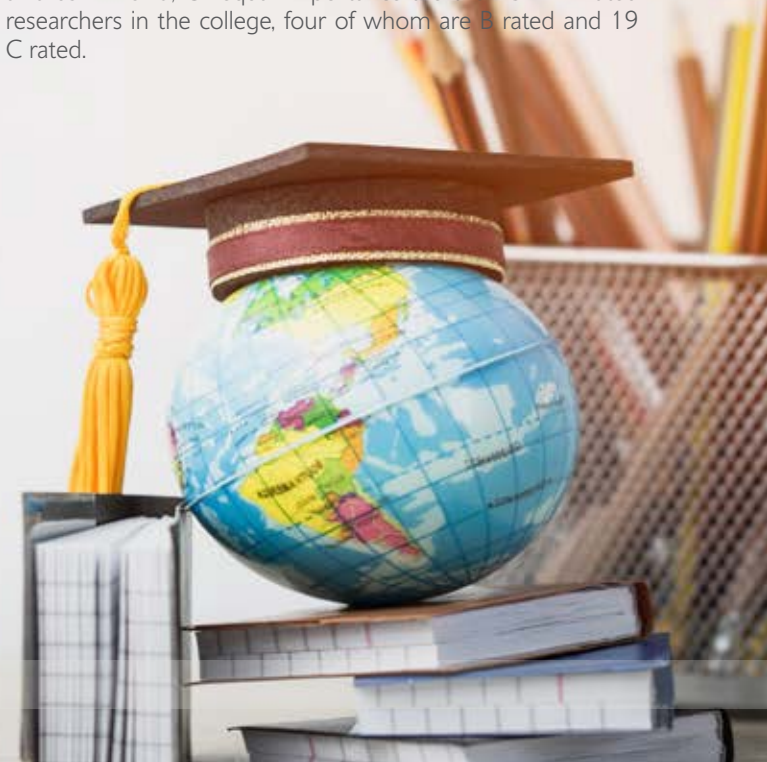
Unisa's answer to the national imperative is to increase the number of doctoral graduates and to provide for high-calibre research outputs from postgraduate research. To this end, the CGS Postgraduate Administrative Department has the vital task of dealing with the applications and admissions of students registered for postgraduate diplomas, honours, master's and doctoral degrees, as well as with the coordination of assessments for master's and doctoral dissertations and theses. The approximately 10 000 master's and doctoral candidates at Unisa represent a large portion of the research potential in South African universities. In addition, CGS assists in increasing the number of successful graduates from this cohort to ensure Unisa's competitiveness among emerging economies. Consequently, a steady growth has been maintained in postgraduate throughput over the past years. The number of master's and doctoral graduates increased to 1 024 and 350, respectively, in 2018.

Offering research methodology training is a central platform of the CGS, and the School of Interdisciplinary Research and Graduate Studies (SIRGS) has developed a range of research support training programmes offered through workshops, colloquia, video conferences and virtual research environments. Such training reaches out to candidates in Unisa's various regional centres, from Gauteng to Akaki in Addis Ababa, Ethiopia. Many of the offerings are generic, but some are tailor-made to fit the precise demands of specific fields of research. The Annual Interdisciplinary

Academy hosted by the college's School of Interdisciplinary Research and Graduate Studies (SIRGS) offers an exciting programme for postgraduate students registered at Unisa. This unique programme brings postgraduates together in an interdisciplinary environment to design and conduct innovative research. The academy offers eight streams that address exciting societal and scientific issues ranging from water scarcity, sustainable energy, nanotechnology, sustainable development, climate change, drug discovery and cosmology to masculinities and femininities.

One of the college's biggest successes of 2018 was its achievement in securing external grants of R16,3 million.

In addition, three researchers from the CGS received external awards in 2018. Of equal importance are the 23 NRF-rated researchers in the college, four of whom are B rated and 19 C rated.





Publications

Of the 32 permanent researchers in the college, 21 generated accredited research publications.

Most of these publications appeared in accredited journals but a number of i-books and book chapters also contributed to scholarly outputs. Although greater emphasis is placed on the publication of articles in accredited journals than on conference papers, several papers were presented and published as peer-reviewed proceedings.

In total, the CGS had 127 research publications, translating into 81.9 research units against the target of 65 set for 2018. Three ODL research output units were published in 2018, lower than the target of 10. An increase in the number of publications in IBSS and ISI journals was noted for the 2018 academic year.

Internal and external funding

In 2018, eight researchers received internal funding amounting to R316 015 and 17 received NRF awards amounting to R540 000. In addition, two researchers received Unisa research support funding totalling R300 000.

Furthermore, funding to the value of R16.3 million was secured from external funding sources including the NRF, SA Medical Research Council (SAMRC), the NRF S7F Scarce Skills Fund and the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Postdoctoral fellows and visiting researchers

Twelve postdoctoral fellows were attached to the CGS in 2018 and collectively published nine journal articles in peer-reviewed journals.

The college successfully applied to host two visiting researchers in 2019 under the Institute for Social and Health Sciences (ISHS) and the Archie Mafeje Research Institute (AMRI).

Pursuing its vision

All in all, 2018 was a productive year for the college, which exceeded its research publications target by a substantial margin, oversaw good increases in master's and doctoral graduates and secured significant external grant funding. Improvement is required in the area of ODL research outputs, where the CGS came in below the target set, and this has been earmarked for ongoing attention. On the whole, however, the college is well positioned to move ever closer towards its vision of establishing a central hub for postgraduate students' research support nationally and on the African continent.



Directorate of Innovation, Technology Transfer and Commercialisation

Unisa's intellectual property (IP) portfolio continues to grow. At this stage, the portfolio consists of 23 active technologies, meaning technologies that Unisa researchers are working on and which are being pursued in terms of further funding, patenting and commercialisation potential.

IP disclosures and patents

In 2018 the DITTC received 25 new intellectual property disclosures, a 35% growth. The majority of the disclosures originated from the College of Engineering, Science and Technology (47%), followed by the College of Graduate Studies (19%) and undergraduate students (19%).

In 2018, the most prolific IP creators at the university were Professor Malik Maaza, holder of the UNESCO-Unisa Africa Chair in Nanosciences and Nanotechnology, who was involved

in four IP disclosures, and Dr Grace Ijoma and Professor Tonderayi Matambo of the College of Science, Engineering and Technology.

The number of granted patents in the IP portfolio grew to 11 during the year, showing rapid progress since the granting of the first patent in 2015.

The patent pipeline continues to grow. During the year, 16 patent applications were processed, comprising three new provisional applications and 13 national/regional applications.

Seed funding

Most of the technologies disclosed in 2018 are in the early stages and additional funding is needed to mature them. The Technology Innovation Agency (TIA) Seed Fund Programme

has been an invaluable source of such funding and currently supports eight projects. Five of these projects concern water recovery or purification, highlighting Unisa's commitment to address water pollution or scarcity, which is a serious threat to the water security of South Africa.

In 2018, the DITT submitted a further two applications to TIA for funding.

Raising IP awareness

The directorate equips staff and students with the tools to evaluate the potential of their ideas and, if feasible, to pursue their development and commercialisation. These tools include InnovationSense workshops, the annual Research and Innovation Student Showcase, the Innovation Challenge for students and the Innovation Support Programme for staff.



Directorate of Innovation, Technology Transfer and Commercialisation - (continued)



InnovationSense – Be IP Smart

InnovationSense workshops raise awareness of innovation and IP among staff and students and, from 2018, offer participants practical tools to evaluate their ideas.

In 2018, 11 workshops were held across the country for 112 people. In addition, 22 mini-workshops reached 2 263 students. Topics covered included the South African National Innovation System, the IP Rights for Publicly Financed Research and Development Act, the Biodiversity Act, funding opportunities and commercialisation routes. Furthermore, participants learnt how to develop a business model for their innovations and to map potential opportunities and drawbacks.

Innovation Challenge for students

This challenge encourages students to develop innovative projects for solving societal challenges, providing grants to students whose ideas are considered to have potential for development.

To lay the groundwork for the 2018 Innovation Challenge, the DITTC organised 22 innovation workshops across South Africa. By the close of applications, there were 18 submissions involving 49 students of whom 55% were female. While some of the ideas were novel, improvement was needed in how they were articulated and so sessions on this were organised.

The challenge's selection committee shortlisted 16 projects, and these were then pitched to a four-member external assessment panel. Four projects were selected for Innovation Challenge Awards.

Table 2: Projects selected for 2018 Innovation Challenge Awards

College	Title	Team leader
Law	Legal Scholar	Ms Buntle Khumalo
Human Sciences	Dual Ankle Bracelet Monitoring	Ms Lisa Jaison
Science, Engineering and Technology	Draw it, filter it, drink it	Mr Rapelang Patala
Economics and Management Sciences	Tx Trade (textbook trade)	Mr Thabang Mofokeng



Directorate of Innovation, Technology Transfer and Commercialisation (continued)

Student Research and Innovation Showcase

The Annual Unisa Student Research and Innovation Showcase highlights the importance of research and innovation as tools for socio-economic development and encourages awareness of the country's strategic R&I initiatives. It is a joint initiative of the Unisa Research and Innovation portfolio and the Unisa National Student Representative Council.

The 2018 Student Showcase was held from 13 to 17 August and involved various activities, including 24 workshops on writing research papers, which 4 320 students attended. This resulted in the submission of 92 papers, the best of which were acknowledged at an awards ceremony.

A delegation comprising the winners of the Innovation Challenge paid a six-day visit to the University of San Paulo in October 2018. The busy itinerary included a visit to the University of Campinas where discussions were held about possible collaborations.

The winners and runners up in the research paper presentations paid a visit to the University of Dar-es-Salam from 4 to 10 November 2018.

Disappointingly, the third exchange visit was placed on hold as the usual host, the University of Mumbai, cancelled at short notice. Instead, Michigan State University in the United States agreed to host us from 4 to 10 March 2019.

Good progress made

Considering that Unisa has only been actively building its IP portfolio since 2012, the university has come a long way in a reasonably short time, with 11 granted patents, 23 active technologies and a steadily growing appreciation of R&I among students and staff alike. The DITCC is committed to further refining the R&I toolkit available to those wishing to develop and commercialise their ideas, and is grateful for the investment that Unisa has made, and continues to make, in its IP portfolio.





Research Integrity Office

For Unisa's Research Integrity Office (RIO), the distinguishing feature of 2018 were the gains made in establishing collaborations in the national and international research integrity fraternity. In parallel with this, the RIO continued to support the university community in the areas of training, capacity building and good research ethics governance.

National and international collaborations

During 2018, the RIO continued to build its reputation as a leader in the national and international research integrity fraternity by undertaking a number of high-level collaborative engagements.

As part of a USA National Institutes of Health-funded research project, researchers from Moi University in Kenya identified the RIO as a model case for benchmarking research integrity practices. The vision of this project is to succeed in the implementation of a Framework for Preventing and Managing Research Misconduct in the whole of Kenya. This collaboration resulted in an invitation to the Research Integrity Manager, Dr RG Visagie to present at an international workshop held in Nairobi, Kenya on 27 and 28 February. In addition, an abstract co-authored with the Moi University researchers was accepted for presentation at the 6th World Integrity Conference taking place in June 2019.

In another major milestone, the Directorate: Research Support successfully co-hosted the Sixth International Conference on Ethics Education with the Tshwane University of Technology under the auspices of the International Association for Education in Ethics. The conference, held in Stellenbosch

in the Western Cape from 3 to 5 October 2018, attracted 142 delegates from more than 22 countries. An important outcome of the conference was the development of a Code of Conduct for Ethics Educators.

Dr Retha Visagie, Manager of RIO and also Chairperson of the Executive Board of the Research Ethics Committee Association of Southern Africa (REASA), participated in a panel discussion organised by Globethics.net in Geneva, Switzerland, on the topic Showcasing (ethics) excellence: Effective practices in different contexts. Further to that, she acted as a peer evaluator for a course on Ethics in Higher Education developed by Globethics.net. This online course is now available for Unisa employees interested in grooming their ethics skills.

Under the auspices of REASA, Dr Visagie coordinated or co-facilitated two training events. One was a workshop on research ethics leadership in Africa, held in Stellenbosch in May 2018 ahead of the annual seminar of Advanced Research Ethics Training in Southern Africa (ARESA). The attendees were 37 academics and health research ethics committee members from eight higher education institutions from across Southern Africa, including Kenya and Botswana. The delegates represented various disciplines, including social work, physiotherapy, clinical psychology, law, business and economic sciences and medicine.

The other training event was a regional Research Ethics Workshop in Botswana on 13 and 14 September 2018 for the Botswana Institute for Technology Research and Innovation. There were 34 participants.



Research Integrity Office (continued)

Institutional research integrity highlights

The contribution that Unisa's RIO has made to research integrity and ethics education was acknowledged when Dr Retha Visagie received the 2018 Southern African Research and Innovation Management Association (SARIMA) award for Professional Excellence in Research Management.

On institutional level, a substantial amount of ground was covered in supporting the university's research ethics committees and researchers, especially in the spheres of training and capacity building and good research ethics governance:

- The RIO ended the year 247% ahead of its target for training academics and researchers in research ethics. In all, 912 Unisa employees, postgraduate students, and external parties received research ethics training.
- The Unisa Research Ethics Review Committee and the College Research Ethics Committees processed 1 725 applications for ethics clearance from Unisa postgraduate students, academic and professional researchers.
- Unisa further increased its compliance with the National Health Act when the Department of Social Work Research Ethics Review Committee (ERC) was registered with the National Health Research Ethics Council (NHREC). This is the fourth registered committee at Unisa, thus providing greater access to registered ERCs to Unisa researchers doing health research.

The RIO hosted a research integrity seminar where one of the speakers was Professor Joseph Mfutso-Bengo, an internationally renowned research ethicist. He spoke about moral capital investment in research integrity. This initiative resulted in ongoing collaboration with Prof Mfutso-Bengo and the manager of the Unisa HIV, Social Diversity and Inclusion Curriculum Integration Project, Mr Leon Roets.

Towards a sustainable culture of research integrity

While there is still much work to be done before Unisa can claim to have embedded a sustainable culture of research integrity among all researchers and students, solid foundations are in place for continued progress. Testimony to this foundation is that out of 1 725 research studies approved for ethics clearance, there were only 0.3% of cases of reported complaints or deviations from the university research ethics application process.



Unisa Library and Information Services

The Library and Information Services directorate strives to advance knowledge generation and the realisation of excellent research aligned with the strategic focus areas of the university. Over the decades, the library has shown itself to be adept at incorporating new technologies, platforms and formats into its services and collections. In keeping with the demands of the 21st century digital era, the library has ensured that its research support processes match the changing needs of library users, who are increasingly using technology and social media in all spheres of their lives, while offering researchers increased opportunities to enhance their research e-visibility.

The collection development process also ensures alignment with PQM requirements and provision of relevant resources in hardcopies and e-books. The archives process a number of collections, received or donated, which enhance the transformation of the library's collections.

The librarians advise and interact with researchers on the selection and identification of quality journals and publications. These services aim to enhance research outputs for the benefit of both the researcher and the university, as well as to generate new knowledge for societal development.



Unisa Library and Information Services (continued)

Research quality and research performance evaluation

In support of ensuring quality research outputs, the library offers extended services from the vast range of research resources, research management tools and online selector tools.

The library also compiles discipline-specific training material for researchers on quality journals in which to publish, and uploads these on myUnisa departmental websites. It offers group and individual training to optimise the valuable research resources and research services available to clients. In addition, the library arranges publisher seminars and workshops covering topics on research outputs and research quality, including information on the publishing process, ethics in publishing and current developments and trends in scholarly publishing.

Other resources made available online for researchers include comprehensive library guides, with specific reference to research support.

In support of research performance evaluation, the library creates researcher performance/evaluation reports using library resources and etools. A comprehensive service is offered to assist researchers in preparing for the process of applying for NRF rating. The other services include raising awareness of e-visibility, creating profiles for researchers, reporting of H-Indexes in the NRF rating application system, linking the researcher's ORCID identity to the NRF rating application system, and creating awareness of the Unisa Institutional Repository and open access.

Extensive services are provided to ensure material requested from the library in the form of books and Interlibrary loans are provided to all clients using postal and courier services. Library and Information Services has also ensured clients have optimal access to its information resources and services by entering into collaborative agreements with public libraries and the National Department of Correctional Services (DCS).

Library collections 2018

The Unisa Library has proactively planned for the development of collections that would address the diverse academic needs and programmes within the university.

A total of 34 942 information resources were added to the collection during 2018 and 73% of these acquisitions were research-based.

The library branches remain a vital part of the Unisa Library. As tables 3 and 4 illustrate, there are significant library collections at the various branches and mobile libraries.

Table 3: Stock items per branch in 2018

Branches	
Cape Town	20 130
Durban	29 197
East London	11 127
Ekurhuleni	9 440
Ethiopia	11 306

Branches	
Florida (Science Library)	22 761
Johannesburg	17 451
Nelspruit	7 145
Pietermaritzburg	5 893
Polokwane	17 704
Port Elizabeth	4 302
Rustenburg	9 438
Sunnyside	20 148
Subtotal	186 042

Table 4: Mobile libraries: Total number of items in stock, 2018

Mobile Libraries	
Mobile bus Cape Town	6 301
Mobile bus Polokwane	6 364
Subtotal	12 665



Unisa Library and Information Services (continued)

Open access

The Unisa Institutional Repository (Unisa IR) once again played a key role in providing open access to Unisa research output during 2018.

The repository had 21 359 items at the end of 2018, representing growth of 10% in research outputs and 4% in electronic theses and dissertations (ETDs) added. The UnisaIR enjoyed 10,5 million views during the year.

In October 2018, the library participated in International Open Access Week, showing various open access tools and resources at exhibitions held at the Muckleneuk campus and the Science Campus in Florida. The library also hosted the 2018 Unisa Open Scholarship Seminar, where invited speakers focused on the current status of open access, open science and research data management in South Africa.



Archives

The Unisa Archives and Special Collections received a total of 1.6 linear metres of donated archival material, of which the Maishe Maponya Collection was the most noteworthy. Maponya produced plays that protested and promoted resistance against the systematic dehumanisation of black South Africans under apartheid. This initiative, headed by Professor Marisa Keuris and Andile Xaba, forms part of the broader South African Drama and Theatre Heritage Project housed in the Department of Afrikaans and Theory of Literature in Unisa's College of Human Sciences. Eight books were donated and added to the Special Books Collection.

The Archives also received approximately 16 linear metres of Unisa corporate records that will be preserved for institutional memory.

Table 5: Donations, 2018

Donor	Material donated	Archival Group
Mr Maishe Maponya	Maishe Maponya Collection 1,4 linm	Manuscripts MSS Acc 205
Dr Clive Napier for Dr Graham Domy	Election education and political papers 0,2linm	DCAS Acc 425
Dr SEM Pheko	5 books	DCAS Acc 133
	Technikon SA newsletters, 1993 – 2003	Unisa Archives
Graduations - Unisa	Graduation programmes 2017 & 2018	Unisa Archives

Donor	Material donated	Archival Group
Unisa Press - Ms Sharon Boshoff	Unisa History - Prof Manson 2 books	Unisa Archives
Committee Services	Legal office - Minutes, agendas, annexures 12,9 linm	Unisa Archives
Ms Sharon Boshoff - Unisa Press	1 copy "Spes in Arduis" English	Unisa Archives
Ms Sharon Boshoff - Unisa Press	Unisa Journals - published by Unisa Press 25 boxes 2,5 linm	Unisa Archives

Essential resource

The Unisa Library is an essential resource for the Unisa community, offering both traditional library services and an increasingly sophisticated array of digital services, along with comprehensive support for researchers seeking to create or enhance their e-visibility, publish their work in respected journals and make maximise use of the research tools and resources available to them, including the Unisa Institutional Repository. Despite funding constraints, the library continues to increase the information resources available to researchers and to make its collections more accessible to them, especially by using digital technology. As such, the library is an integral part of Unisa's efforts to advance knowledge generation and the realisation of excellent research aligned with the strategic focus areas of the university.



[BACK TO CONTENTS](#)



Research Chairs and Institutes

06



Research institutes and other research entities

Research chairs, institutes and other entities play an important role to stimulate research and promote research excellence.



Professor Catherine A Odora Hoppers

One of the nine endowed chairs, the DST/NRF Chair in Development Education, came to an end in 2018 after more than a decade in existence. The holder of the chair since its inception was Professor Catherine A Odora Hoppers.

The year also marked the conclusion of the Unisa research chair programme, through which the university itself had been funding five research chairs on eco toxicology, high-performance scientific computing, macro-economic policy analysis, superconductivity energy technology and topology.

The Unisa-funded chairs were initially established in 2015 for a three-year period and were then renewed at the end of 2015 for a further three-year period. This period came to an end in December 2018 and the chairs were not renewed. They have made a substantial contribution to Unisa's body of knowledge in the disciplines concerned and the university and its students will continue to benefit from this in the years to come.

Research chairs

Research chairs are an indispensable part of the university's research efforts as they allow for a dedicated focus on specific areas of research in which Unisa excels and which are considered to be national and continental priorities.

During 2018, the university had nine endowed research chairs, referring to chairs awarded to Unisa by external bodies such as the South African Research Chairs Initiative (SARChI) of the Department of Science and Technology/ National Research Foundation (DST/NRF), the United Nations Scientific, Educational and Cultural Organisation (UNESCO) and corporations or non-profit organisations.



Professor Judy van Biljon

DST/NRF SARChI Chair in ICT for Development (ICT4D)

Information and communication technology (ICT) is an integral part of life in the 21st century; the challenge is to ensure that ICT developments reach the marginalised and resource constrained communities and are used for the betterment of all in a sustainable way.

The SARChI Chair in ICT for Development (ICT4D) was established in the School of Computer Science within the College of Science, Engineering and Technology with a first cycle of 2016-2020.

The chair holder is Professor Judy van Biljon, whose current research focuses on Human-computer interaction for development (HCI4D), which operates at the intersection of Human- computer interaction and socioeconomic development focusing on understanding and designing technologies for under-served, under-resourced, and under-represented populations in diverse geographic regions.

"A current focus is knowledge visualisation which lies at the intersection of Human-computer interaction, Education and Knowledge Management, where the three disciplines converge in the goal of investigating the optimal use of technology for knowledge transfer to and between humans," van Biljon says. The application area is the South African and wider African context as a developing region.

The chair's research is interdisciplinary, involving aspects of both technology and development. This involves activities such as the design, development and evaluation of computing systems for marginalised communities, as well as investigating how specific groups engage with technology and evaluating technology-assisted programmes to support human development.



Dr Sheila Nyatlo

DST/NRF SARCHI Research Chair for Law, Society and Technology

Technology is changing Africa and the rest of the world, but how is the law keeping pace with these changes and their impact on society? Ensuring that legal frameworks support rather than stymie technological progress is an important consideration in the continent's quest to encourage African innovation and protect intellectual property.

Located in the College of Law, the DST/NRF SARCHI Research Chair for Law, Society and Technology was established in January 2016 to generate knowledge and develop human capital that brings the law and technology together. For example, the continent needs appropriate legal frameworks for e-commerce, with a special focus on intellectual property law and innovation, including the role that design law can play in the innovation chain.

Standing for the values of innovation in science and technology, and the promotion of democracy, human rights and responsible citizenship, the chair is investigating the role of intellectual property (IP) in the knowledge economy, the management of IP for distance learning, legal aspects of cybersecurity and IP, and cybercrime.

The chair, together with the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) organised the first regional WIPO-WTO Colloquium for participants from Africa from 9 to 12 April 2018. Immediately after the WIPO-WTO Colloquium, the chair hosted the IP Scholars Africa Conference.

The colloquium and conference discussed IP law and policy issues in the African context. Over 60 IP professionals from 20 countries came together to share concepts and expertise. Members of the Chair for Law, Society and Technology presented various papers for the edition of the conference proceedings to be published by WIPO-WTO.

During 2018, members of the chair presented 18 papers at international conferences and 10 at national conferences, and authored nine accredited articles. Three of these were published during the year while two were accepted for publication and four were submitted. Members also published one book chapter and had three book chapters accepted for publication.

Three LLM students graduated. Mr Russel Luck wrote his dissertation on the legal implications of click wrap agreements, while Ms Morne Barradas obtained a distinction for her dissertation on monetisation strategies to create and extract business value from patent assets. Ms Vuyisa Dlamini wrote her dissertation on the management of intellectual property rights in commercial contracts.

The acting chair holder is Dr Mavis Nyatlo of the Department of Mercantile Law at Unisa.



Professor Jimi Adesina

DST/NRF SARCHI Chair in Social Policy

Hosted by the institute for Graduate Studies, the SARCHI Chair in Social Policy is part of the National Research Foundation's SA Research Chairs Initiative. It was awarded to Unisa in February 2013. Professor Jimi Adesina has been the chair holder since mid-2013.

A past president of the South African Sociological Association, Adesina was elected to the Academy of Science of South Africa (ASSAf) in 2005. He serves on the Board of the UN Research Institute for Social Development (Geneva) and the Board of RC19 of the International Sociological Association.

The activities of the chair are organised in three clusters: research, postgraduate education and policy outreach. The research programme is organised under the theme "Rethinking social policy: in search of inclusive development". Its sub-themes are rethinking poverty and non-formal social provisioning. Research projects include the social policy dimensions of agrarian and land reform and the study of stokvel/eSuSu.

In 2018, the Chair in Social Policy generated 11 research outputs in accredited international journals and an edited book volume.



LAND REFORM FROM A SOCIAL POLICY PERSPECTIVE COULD TRANSFORM SOUTH AFRICA

Addressed appropriately, land reform in South Africa has the potential to help eradicate poverty and bring about lasting, meaningful improvements to the wellbeing of its citizens.

This is according to Professor Jimi Adesina, holder of the DST/NRF SARCHI Chair in Social Policy and a researcher at the Archie Mafeje Research Institute (AMRI).

“Social policy seeks to enhance the wellbeing of people and transform the economy. Land reform is an instrument that has the potential to address the five tasks of transformative social policy,” says Adesina.

These five tasks are to raise productive capacity, protect residents in a country from the vagaries of the market and life-cycle, equitably redistribute the outcomes of economic growth, address social reproduction so that women are not penalised for bearing children and, finally, encouraging social cohesion and nation building.

Together with postgraduate students, Adesina has conducted extensive research on the social policy impact of land reform in Zimbabwe.

“The South African context is different from Zimbabwe’s but there are lessons to be learnt,” he says.



Social policy seeks to enhance the wellbeing of people and transform the economy. Land reform is an instrument that has the potential to address the five tasks of transformative social policy.





LAND REFORM A METAPHOR FOR RACIAL INEQUALITY IN SA

"In Zimbabwe, land reform was a direct issue of land hunger in rural areas for production purposes. The pressure for radical land reform was driven largely from people in communal areas, which were overgrazed and overcrowded, invading commercial farms."

By contrast, the argument for land reform in South Africa is – for the most part – not about raising production capacity in rural areas. "Land is a proxy debate, a symbolic issue to represent racial inequality and injustice," Adesina says. "It is as metaphor for racial inequality and racial oppression."

What's more, the implications and mechanisms of land reform in South Africa would have to differ in rural and urban areas.

"In urban areas, land is about housing, which requires a social housing policy," he says. "Here, the mechanism for ownership could be title deeds. In rural areas, land reform is more complicated as there are three tiers of land ownership: individual ownership, state ownership and trust land ownership."

Despite the contextual differences between Zimbabwe and South Africa, the experiences of the former can be salutary for South Africa.



Land is a proxy debate, a symbolic issue to represent racial inequality and injustice," Adesina says.



WHAT SA CAN LEARN FROM ZIMBABWE

Where Zimbabwe did well was to recognise that land reform would necessitate large-scale agrarian support for the beneficiaries, including financing, knowledge transfer and access to veterinary and other services, as well as infrastructure for downstream activities, such as for the marketing of produce.

Adesina explains. "It is not the business of farmers to know how to sell maize in international markets. Zimbabwe understood that but its economy was in a mess – which is another lesson for South Africa to take to heart. Land reform needs strong agrarian support, the country needs to pay attention to its economy, and the benefits of land reform requires sustained investment in healthcare, education, housing and roads. Without these, the economic benefits of land reform will not be realised. There must be investment in a national framework to support the land reform programme.

An increasingly critical issue that must be factored in is the accelerating exodus of people from the rural areas of South Africa into the cities. "If you do not invest in skills, schools, housing, etc, you end up with slums and ungovernable cities."

Thus, from a social policy perspective, the bottom line for land reform in South Africa is this: it is not an end in itself but a means to an end – eradicating poverty, equalising opportunity, transforming the economy and defusing the ticking time bomb synonymous with skewed land ownership and the legacy of injustice.



Professor Godwell Nhamo

Exxaro Chair in Business and Climate Change

The value provided nationally and internationally by the Exxaro Chair in Business and Climate Change in the field of environmental sustainability was once again recognised in 2018 when the chair was renewed for the third time.

The latest renewal saw the chair's funders, the Exxaro Chairman's Fund, providing funding of R12,48 million over the five years to December 2022. The first instalment of R1,966 million came in November 2018.

The chair is hosted by the Institute for Corporate Citizenship in the College of Economic and Management Sciences. The chair's incumbent is Professor Godwell Nhamo, a C-rated researcher who undertakes research in the fields of climate change and governance, green economy and sustainable development. The chair's focus has been to address climate change in the broader context of the 17 interwoven

Sustainable Development Goals, thereby contributing to the 2030 Agenda for Sustainable Development, as well as South Africa's National Development Plan Vision 2030.

Nhamo was also appointed as one of the four members of the African Union High Level Panel that drafted the Green Innovation Framework for the continent, and also sits on a number of international and national boards. His research outputs include eight books, seven of which he edited, and over 80 journal articles. Since 2013, he has graduated 10 PhDs and hosted 10 postdoctoral fellows. One of the current priorities of the Exxaro Chair is to promote quality transformation by assisting junior academic staff members to grow into recognised researchers.

The vision of the Exxaro Chair is to be a centre of excellence in business and climate change research, education and advocacy-oriented community engagement. Its mission is to support South African and African business, government and civil society to reduce greenhouse gas emissions and adapt to climate change. These stakeholders are represented on the chair's Advisory Board, which provides advice on issues of relevance and direction in relation to research, education and community engagement.

In 2018, the chair co-published 10 journal articles in high impact and international journals. The chair also graduated one doctoral student whose ground-breaking research focused on climate change and the mighty Victoria Falls.



His research outputs include eight books, seven of which he edited, and over 80 journal articles. Since 2013, he has graduated 10 PhDs and hosted 10 postdoctoral fellows.





Professor Malik Maaza

UNESCO-Unisa Africa Chair in Nanosciences and Nanotechnology (U2ACN2)

The multi-disciplinary approach of the U2ACN2 chair is cementing African efforts in nanosciences and nanotechnology while addressing urgent societal needs in the water, energy and health sectors across the continent.

The chair's impact is evident from the recognition it has gained in Africa and internationally.

Accepting the 2018 José Vasconcelos World Award of Education at the 35th World Cultural Council Award Ceremony in Hong Kong in November 2018, chair incumbent Professor Malik Maaza said this accolade reflected not a personal achievement but recognition of African excellence.

The award recognised the chair's efforts to promote education for societal development and sustainability through an international and humanistic approach to science education, as well as its commitment to training and mentoring young scientists in Africa.

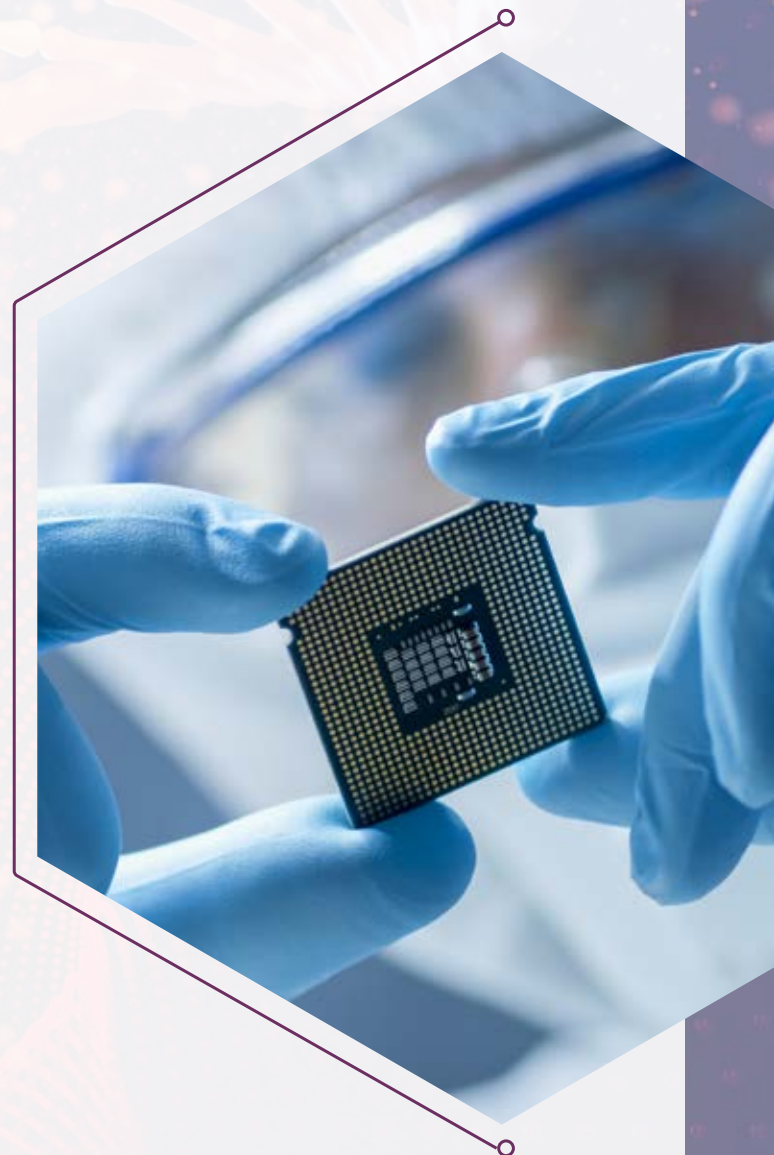
In June 2018, Maaza also received the NSTF-GreenMatter Awards: towards biodiversity conservation, environmental sustainability and a greener economy. This award recognised the many green and sustainable innovations he has developed, such as thermochromic intelligent nanocoating for smart glass windows, minimising the energy load caused by air conditioning and energy use.

Most recently, Maaza received the Galileo Galilei Award of the International Commission for Optics.

Aligned with Unesco's priorities, this Africa chair is responsible for implementing and cementing the trilateral partnership between Unesco, Unisa, and iThemba LABS-National Research Foundation of South Africa in the multidisciplinary field of nanosciences and Nanotechnology. It aims to be the vehicle and sustainable catalyst of the Nanosciences African Network (NANOAFNET), a continental academic network which is an Abdus Salam ICTP network in Nanosciences (ICTP Network n°63).

Based at the Unisa main campus in Pretoria, South Africa, the U2ACN2 chair's mission is to instigate and coordinate a continental dynamic in nanosciences and nanotechnology through capacity-building and ensure robust continental human capital mobility programmes. These involve universities in Africa and key partner institutions in the north, including the Unesco-AIEA Abdus Salam ICTP and the International Organization of Women in Sciences (OWSDW) as well as the Academy of Science for the Developing World (TWAS), among others.

In 2018, the chair produced 75 articles in peer-reviewed journals and graduated seven master's and five doctoral students.





Professor Hasina Ebrahim

UNESCO Co-Chair in Early Childhood Education, Care and Development

During 2018, Unisa continued to co-host of the UNESCO Chair in Early Childhood Education, Care and Development.

Unisa shares this chair with the University of Victoria in Canada, which hosted the chair on its own from 2008 until June 2017, when it supported Unisa's successful application to UNESCO to be the co-holder.

The co-chairholders are Professor Alan Pence from the University of Victoria and Professor Hasina Ebrahim from Unisa's College of Education. This arrangement is synergistic: Pence has a wealth of experience in working with the First Nations in Canada and has also worked extensively with leaders in Africa, complementing Unisa's focus on capacity building and knowledge production programmes.

From Unisa's perspective, the main priority for the Chair in Early Childhood Education, Care and Development is to foreground African research on early childhood, policy, practice and workforce development. The intention is to help develop a new cadre of scholars and researchers on the continent and promote research highlighting African realities and conditions impacting on child outcomes.

In January 2018, the Co-chairs hosted a networking event with eight African countries to enable greater synergies in developing research, policy and practice in the early years. This event created robust dialogue on capacity building for moving early childhood forward in Africa.

Unisa's Ebrahim's was the first runner up in the South African Women in Science Award. This is indeed a notable achievement for the field of early childhood development. She was also invited to deliver the keynote address at the South African Research Association for Early Childhood Education in May 2018. In her quest to grow the early childhood education, care and development field, she graduated a master's and a doctoral student.

Having completed a research monograph in the previous year, Ebrahim played a key role in the completion of a collection of research articles by emerging researchers from 10 different countries in Africa. Specifically, she co-edited a volume entitled *Early Childhood at the Margins: African Perspectives on Birth to Three*, which was published online in late 2018.

She also took the lead in developing the first knowledge and practice standards for teacher education in early childhood. These standards were used by eight South African universities to develop the new undergraduate qualifications for the education, care and development of children from birth to age four.





Professor Moeketsi Letseka

UNITWIN/UNESCO Chair in Open and Distance Learning (ODL)

As South African universities struggle to meet the escalating demand for places from prospective students, the already compelling case for open and distance learning (ODL) is growing even stronger. Latest evidence of this is the decision by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to award a Chair in ODL to Unisa.

The UNITWIN/UNESCO/Unisa Chair in ODL, officially launched on 29 August 2018, cements Unisa's position as

Africa's largest university and one of the mega-universities of the world.

"UNESCO regards Unisa as an African mega-university that is expected to have a massive impact on higher education in South Africa and beyond its borders, especially on the young generation and marginalised communities," says chair holder Professor Moeketsi Letseka.

"As UNESCO has noted, Africa has an 'exploding' youth population, with more than 60% under the age of 35, raising the challenge of matching education and training to employment. Similarly, the Department of Higher Education and Training observes that 51% of the South African population is younger than 25 years old."

Letseka says Unisa is ideally placed to contribute to the UNESCO objective of improving the equity, quality and relevance of education in Africa. "Apart from its geographical reach, which enables the university to support high-level capacity development across borders, Unisa has a vast network of active collaborative relationships with ODL leaders in Africa and internationally."

Unisa's successful chair application to UNESCO included personally signed letters of support from some of the foremost ODL role players on the continent and in the rest of the world. Among them were Mr Gard Titlestad, Secretary General of the International Council for Distance Education (ICDE), Professor Asha S Kanwar, President and CEO of the Commonwealth of Learning, Dr Bakary Diallo, Rector of the African Virtual University, Professor Tsepo Mokuku, Dean of Education at the University of Lesotho, and Dr KS Sukon, Director-General of the Open University of Mauritius.

Over the next four years, the UNITWIN/UNESCO/Unisa Chair in ODL will build a "critical mass" of knowledgeable, highly qualified researchers, scholars and managers in the ODL domain. This is critical to ensuring the success of master's and doctoral students and the development of appropriate ODL teaching technologies and methods.

With its national, regional and international focus, the chair will collaborate extensively with other ODL institutions in Africa, Canada, Europe, India, Brazil and the United States for purposes of research, postgraduate supervision and the sharing of ODL knowledge, resources and technologies.

The chair is part of the UNITWINS/UNESCO Chairs Programme, launched in 1992 and consisting of 700 Chairs in 116 countries. The aim is to enhance international inter-university cooperation and networking in key priority areas in education, the sciences, culture and communication.



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Research Chairs and Institutes



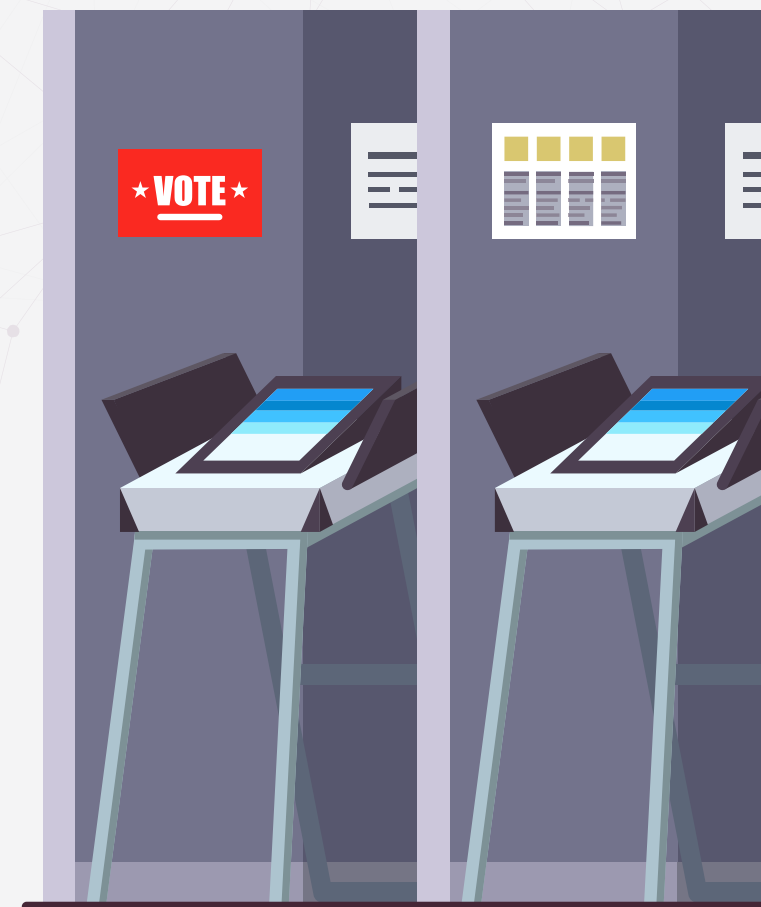
Professor Kealeboga J Maphunye

WIPHOLD-Brigalia Bam Research Chair in Electoral Democracy in Africa

The WIPHOLD-Brigalia Bam Research Chair in Electoral Democracy in Africa has for the past six years been playing a critical role in South Africa's evolving democratisation and Africa's elections. Its contribution includes training and organising election observer missions, hosting an annual colloquium for African elections bodies and officials, producing high-quality publications and books, and participating in public and media debates on elections, democracy and governance in Africa.

Established in 2012, the chair is located in the College of Human Sciences and, by training and empowering election officials, strives to contribute to addressing issues affecting the fairness and credibility of African elections. Such issues include electoral violence, political instability and the appointment of leaders not elected according to continental and international election management best practices.

Prof Kealeboga Maphunye was the holder of the chair from its inception to September 2018 when he was appointed as head of the Department of Political Science in the College of Human Sciences.



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Institutes

Unisa takes great pride in its institutes, bureaux and other research entities dedicated to a wide variety of research areas. These units are just as active as the various chairs, and involve academics, students and the community.



Professor Wendy Isaacs-Martin

Archie Mafeje Research Institute (AMRI)

The Archie Mafeje Research Institute for Applied Social Policy (AMRI) is a policy research institute dedicated to enhancing endogenous and Pan-African research for application in resolving Africa's social challenges. Named after the late Professor Archie Mafeje, AMRI strives to do research that affirms Africa and contributes to the renaissance of the continent.

In seeking to influence progressive social change in Africa, the institute's researchers undertake critical enquiry into African knowledge production and epistemological systems. They also strive to understand African families in the context of demographic change and the social institutions that are relevant to transforming the African state. Other key research themes are the conceptualisation of land and agrarian reforms that redress inequality and eradicate poverty, and rethinking the concepts and processes of inclusive development for the 21st century.

The DST/NRF SARCHI Chair in Social Policy, established in 2013 to reinvigorate contemporary thinking on social policy, is housed within the institute, which is in the School of Transdisciplinary Research Institutes (STRI), College of Graduate Studies (CGS).

In 2018, AMRI produced nine articles in peer-reviewed journals, four books and 12 book chapters and supervised at least six PhD and six master's students.

Professor Wendy Isaacs-Martin was acting head of the institute in 2018.



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Professor Deon Tustin

Bureau for Market Research (Pty) Ltd (BMR)

Widely known and well respected for its market research (1960 – current), the BMR has in recent years introduced innovative research approaches that harness neuroscience biometrics to provide psychophysiological explanations for human behaviour.



Bureau for Market Research (Pty) Ltd (BMR) (continued)

The Bureau has its own Consumer Neuroscience Laboratory, where it uses the latest neuroscience technologies, in combination with traditional survey methods, to observe and interpret human emotions so as to better understand the impact of marketing stimuli on consumer behaviour.

This research is based on internationally recognised human emotion research techniques that the Bureau has successfully adapted to suit typical South African conditions. It is proving effective in assisting numerous major business enterprises that commission the BMR to do research to understand what motivates consumers' buying, saving and investment decisions. Likewise, the laboratory has benefitted students in completing postgraduate qualifications.

Another innovation by the Bureau was the establishment of the Youth Research Unit (YRU@BMR), which conducts research on youth behaviour in relation to new media usage, social networking, cyber bullying, drug and alcohol abuse and sexual abuse. The unit was formed in response to the growing need for current youth-related research information, especially considering that the South African population is largely composed of children and young people.

Then there is the Business Research Unit (BRU), established to conduct research on estimates of "greatest likelihood" with respect to the number of formal and informal South African business entities.

Overall, the BMR's research skills set encompasses qualitative and quantitative research, observation research, longitudinal

and cross-sectional research, macroeconomic modelling, diagnostic analyses, structural equation modelling, SQL database programme and experimental research.

Much of its work is commissioned research for corporates, government agencies, NGOs, metropolitan municipalities and international organisations such as the World Bank, the African Union (AU), ECPAT and UNICEF.

The BMR continues to conduct market research in four areas, namely behavioural and communication research, demographic research, economic research and household wealth research.

The BMR's research output is prolific. During 2018, in addition to conducting 28 commissioned and 14 institutional research projects, it published three peer-reviewed articles in scientific journals and presented four conference papers. The Bureau also supervised six master's students and 13 doctoral students, and conferred one doctorate.

Through its commissioned research projects, the Bureau contributes to practical research skills development and employment creation. During 2018, it employed 130 people from vulnerable groups (i.e. youth, students and women) to work as part-time interviewers across all nine provinces of South Africa.

Professor Deon Tustin is the Chief Executive Officer (CEO) of the BMR (Pty) Ltd, which operates as a wholly owned subsidiary company within the Unisa Corporate Group.



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Professor Andreas Velthuisen

Institute for African Renaissance Studies

Impact is an increasingly important consideration in publicly funded research, and the Institute for African Renaissance Studies (IARS) is making a significant contribution to development on the African continent on at least two fronts.

Established at Unisa in 2003, IARS has been instrumental in securing the endorsement of the national Department of Education for African Renaissance Studies as a legitimate field of study. The institute is also accelerating development and advancing free and fair elections throughout the continent by

offering the Management of Democratic Elections in Africa (MDEA) programme.

MDEA is a capacity-building partnership between Unisa and the Electoral Commission of South Africa, aimed at training commissioners and elections officials in the management of democratic elections. Since the inception of the programme in 2011, some 36 African countries have benefited from the training.

In November 2018, the Electoral Commission and Unisa extended their electoral democracy memorandum of understanding for a further three years. Apart from offering education and training programmes for election practitioners in Africa, the parties will identify research opportunities to further enhance and promote democratic electoral principles, legislation and practices.

Located in the College of Graduate Studies, IARS is a multidisciplinary, interdisciplinary and transdisciplinary (MIT) graduate academic unit that focuses on developing outward reach to the whole of Africa and Diaspora Africa.

Its research agenda is intended to further Pan-Africanism within the global context, exploring themes such as Africa in the global system, African leadership and intellectual capital, African perspectives on environment and climate change, community leadership and rural development, and South-South cooperation, to name a few.

IARS publishes the *International Journal of African Renaissance Studies: Multi-, Inter- and Transdisciplinarity*, producing two editions in 2018. Its researchers also published 11 articles in accredited journals. At the end of 2018, Prof Andreas Velthuisen was the Head of IARS.

MDEA is a capacity-building partnership between Unisa and the Electoral Commission of South Africa, aimed at training commissioners and elections officials in the management of democratic elections.

Institute for Corporate Citizenship



Professor Mariki Eloff

Inspired by the mantra "Dream, Provoke, Change", the institute conducts critical academic research that influences and provokes business enterprises to change in ways that make them even more accountable to society.

Through its research, the institute poses pertinent, often difficult questions about the role and contribution of business to sustainable development. It converts this research into tuition offerings, such as Sustainability and Greed, a signature module of the College of Economic and Management Sciences.

Professor Mariki Eloff leads the institute in an acting capacity, which has several active research programmes. These are the Exxaro Chair in Business and Climate Change, the Business Ethics Programme and the Information Security as Corporate Responsibility Programme.

ICC's research outputs for 2018 were 13 accredited journal papers and three peer-reviewed conference papers.



Research Chairs and Institutes



David Letsoalo

Institute for Dispute Resolution in Africa (IDRA)

The Institute for Dispute Resolution in Africa (IDRA) was established in 2011 as an institute in the College of Law. It envisions being the lead Africanist institute in conflict resolution and consensus building through community-based research. It is driven by the ideal of being a solutions provider in the field.

IDRA is involved in Africa-focused transformative, participative research that seeks to find Afro-centric pre-colonial solutions and provide them in multi-media formats to its clients

throughout the continent. The institute aligns or adapts these (Afro-centric) solutions to the demands and dynamics of the time and space of the research.

Guided by the principles of Pan Africanism, the institute strives to respond to the need for progressive ideals, meaningful transformative research and engaging with communities of practice. Knowledge (both formal and informal) contributes immensely to the research that is being conducted at IDRA. Communities and academics are involved in joint research initiatives that seek not only to publish but also to address the socio-economic issues that are prevalent in our communities.

IDRA continued to maintain the following research projects that are based on Community-Engaged Participatory Research (CEPR): Traditional Courts (Lekgotla la Batho) Project, Electoral Dispute Resolution Project, Southern African San Dispute Resolution Project, Community Dispute Resolution SLPs and Community Mediation Services. The multi-, inter- and transdisciplinary (MIT) research of the institute inculcates the spirit of thinking beyond knowledge construction and generation. This speaks to an inherent vision of placing a people or communities with their varying and diverse uniqueness at the core of the institute.

The institute has created international and national relations with various stakeholders such as the Institute for Peace and Conflict Resolution (IPCR, Ministry of Foreign Affairs, Nigeria), Zindzi Mandela Foundation, Mekelle University (Ethiopia), Institute for Ethiopian Studies and the College of Law (University of Addis Ababa, Ethiopia), Miriam Makeba Foundation, Road Traffic Management Corporations (RTMC), the National Taxi Alliance (NTA), various kingdoms/queendoms and traditional councils within South Africa, other institutes nationally, in East and West Africa and various (community) organisations that

are mandated to engage with people on different platforms. As an institute for dispute resolution, disputes in Africa and indeed the world over are a critical concern to communities wherever they find themselves.

The institute has over a period of seven years managed to generate hundreds of outputs. The outputs for 2018 alone totalled at least 13 publications (five book chapters and eight articles).

David Letsoalo is the Acting Head of the Institute for Dispute Resolution in Africa.



The multi-, inter- and transdisciplinary (MIT) research of the institute inculcates the spirit of thinking beyond knowledge construction and generation.



Professor Nokuthula Mazibuko

Institute for Gender Studies

The institute has an accredited and registration of Bachelor of Arts Honours (Gender Studies) and Master of Philosophy (Gender Studies). It has a journal Gender Questions which is accredited by Department of Higher Education and Training. The journal hosts special issues, and normal volumes which focuses on interdisciplinary and transdisciplinary research with an aim of advancing gender transformation in the African continent and globally. The institute is a member of the South African Association of Gender Studies. It hosts gender symposium, colloquiums, research seminars and conferences.

In its ability to attain social cohesion, gender equality and the empowerment of women, the Institute is creating synergies and partnerships with national, international universities and gender communities at large, towards a broader decolonization and Africanisation agenda. It focuses

on mainstreaming gender in the curriculum, understanding gender from an African perspective, providing dialogues on contemporary gender issues and decolonising gender issues in an African context.

At the apparent persistence of gender-based violence, xenophobia, transphobia and homophobia, the Institute seeks to understand and address gender inequities and injustices through theory, practice and community engagement. The Institute prioritizes projects on gender mainly focusing on indigenous systems, religion, culture, diversity, gender mainstreaming, gender violence, work, health, decoloniality, and Open Distance Learning.

The Head of the Institute is Professor Nokuthula Mazibuko.



Dr Philani Mthembu

Institute for Global Dialogue (IGD)

Guided by its motto "Better Africa. Better world", the institute has served as an independent foreign policy think tank for almost 25 years. Based in Pretoria, IGD is focused on analysing and promoting dialogue on the international political and economic environment and the role of South Africa and Africa within it.

Initially founded in 1995 as a grant-funded foundation, it evolved into an institute and entered into a strategic agreement with Unisa in 2010 to pursue joint research, dialogue and publications.

The Institute advances balanced, relevant and policy-oriented analysis, debate and documentation of South Africa and Africa's global politics and diplomacy, and strives to promote a broader understanding of the role of foreign policy and diplomacy in the pursuit of national and international development goals.

It has four research programmes: foreign policy analysis, geopolitical dynamics and governance, international diplomacy

and the Centre for Latin American and Caribbean Studies.

The Institute publishes a number of journals, newsletters and policy reviews. Latin American Report is its annual journal on the Global South and various occasional papers disseminate the views of the institute's researchers. Through Global Insights, IGD provides members of the policy community with analyses of topical issues while the Global Dialogue is an international affairs review.

IGD does occasional project and consultancy work with the South African government, international organisations and major South African corporates that have invested in emerging markets.

In 2018, IGD published one peer-reviewed journal article and one book, and supervised six honours students, one master's student and two doctoral students.

Dr Philani Mthembu is the Executive Director of the IGD.



Research Chairs and Institutes



Professor Sindile Ngubane-Mokiwa

Institute for Open and Distance Learning (IODL)

Open distance learning has enormous potential to take affordable, quality higher education to people across Africa and further afield who for various reasons would not otherwise have access to it. That said, the ODL experience is vastly different from that of conventional contact universities – both from the perspective of students and of academic and support staff.

Intent on contributing to student success and building the ODL skills of Unisa staff – and ultimately to position Unisa as a leading ODL institution in Africa and the rest of the world – the Institute for Open and Distance Learning (IODL) is a university-wide research institute for ODL research and capacity building.

Apart from conducting its own basic ODL research, the IODL collaborates with researchers across Unisa, as well as nationally, continentally and internationally. Current collaborative research projects involve topics such as technology enhanced learning, student support, alternative assessment practices, access for students with disabilities, ODL policy formulation and open educational resources (OERs), among others.

The Institute also provides a range of intervention programmes to support Unisa staff and postgraduate students in conducting and disseminating ODL research. One of the most important of these is the Searchlight Research Project, which holds research training workshops to prepare staff and students for academic debate, rigorous ODL research practice and scholarly presentations.

In addition, IODL researchers supervise postgraduate ODL research in collaboration with Unisa's colleges, ensuring a multidisciplinary interdisciplinary and transdisciplinary (MIT) approach to research.

Further, the Institute represents Unisa at continental and global ODL bodies such as the African Council for Distance Education, Commonwealth of Learning, International Council for Distance Education, Distance Education Association of Southern Africa and National Association of Distance

Education and Open Learning in South Africa. The Institute was instrumental in establishing the South African chapter of the Global Doctoral Consortium of the International Council for Distance Education.

Professor Sindile Ngubane-Mokiwa is the head of the IODL, which is part of the College of Graduate Studies.



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Research Chairs and Institutes



Professor David Mogari

Institute for Science and Technology Education (ISTE)

For South Africa to produce the number of quality scientists and technologists it needs to develop and compete internationally, the quality of mathematics, science and technology (MST) education has to improve. Stepping up to the challenge is the Institute for Science and Technology Education (ISTE).

The Institute resides in the College of Graduate Studies and promotes inter-college collaboration in the interest of MST education. Through this collaboration, the Institute coordinates the integration, tuition and development of modules for all formal and non-formal MST education programmes at Unisa and undertakes high-quality research.

In addition to its tuition and research activities, ISTE is working to expand and strengthen the country's pool of MST education practitioners and liaising with government and non-governmental organisations.

Since 2009, the institute has held an annual winter school as part of its community service for the development of MST educators. Another annual event is the ISTE Conference, which has been held in the Kruger National Park since 2010. Apart from being a forum for established researchers to discuss their research, the conference has also provided novice researchers with opportunities to enhance their knowledge.

The Institute has five main lines of education research: mathematics, life sciences, physics, chemistry and information and communications technology (ICT). Research focus areas include the use of socio-cultural activities in the teaching and learning of mathematics, teaching in large, under-resourced classes and the use of technology in mathematics and science teaching.

During 2018, ISTE researchers published eight articles in peer-reviewed journals and nine conference proceedings.

Professor David Mogari heads the ISTE.



The Institute resides in the College of Graduate Studies and promotes inter-college collaboration in the interest of MST education.



Research Chairs and Institutes



Professor Mohamed Seedat

Institute for Social and Health Studies (ISHS)

The ISHS is an Africa-centred, internationalist home to community-engaged scholars and activists who situate themselves in compassionate, transdisciplinary liberatory knowledge practices in the service of contextualised human development. The institute has expertise in the social, psychological and health sciences, with a deep commitment to the promotion of peace and safety in communities.



Part of the College of Graduate Studies, the Institute has three programmes: Violence, Injury and Peace Promotion Research Unit (VIPRU), Research Unit on Men and Masculinity (RUMM) and Transdisciplinary African Psychologies (TAP).

Part of the College of Graduate Studies, the Institute has three programmes: Violence, Injury and Peace Promotion Research Unit (VIPRU), Research Unit on Men and Masculinity (RUMM) and Transdisciplinary African Psychologies (TAP). Through these programmes, the ISHS is well positioned to carry out its mission to enact liberatory compassionate scholarship and activism in the service of human development.

Recognised as a regional resource and international expert in specific niche areas, the ISHS is focused on growing Africa-oriented research, expertise and community development. The Institute offers analytically oriented services, research-based information and specialist advice to government, corporate and civil society actors.

Its accredited journal, *African Safety Promotion: A Journal of Injury and Violence Prevention (ASP)*, promotes multidisciplinary research and serves as a forum for discussion and critical debate among researchers, academics, policy-makers and practitioners active in the field of injury prevention and safety promotion in Africa. All ASP articles are subject to double blind peer review. The journal covers a wide range of subjects centering on injury, violence and safety promotion, including critical social perspectives to injury and violence prevention; injury surveillance studies; epidemiological research; risk and resilience studies associated with violence and injuries; best practices for injury prevention and containment, and safety and peace promotion.

Researchers at the Institute also produce various manuals, fact and information sheets, brochures, photo-books, posters, and film and video material dealing with a range of subjects related to its core research programmes.

The institute provides postgraduate training and internship opportunities for next-generation scholars and in 2018 graduated one master's student and one doctoral student. Its researchers produced 23 articles in peer-reviewed journals, two conference proceedings, 24 book chapters and three books.

Professor Mohamed Seedat is the Head of ISHS.





Research Chairs and Institutes



Professor Victor Molobi

Research Institute for Theology and Religion (RITR)

The RITR for its future operation focuses on applying for external funding, research as its core business, setting the research agenda, performance, evaluation and governance. These key points come from its 40 years of experience. It has been developing, managing and disseminating religious and theological research which impacts on the South African and African context. The Research Institute for Theology and

Religion recognises the national and international priorities and location in Unisa as an ODL institution.

The institute offers the expertise and opportunities for inquiry, community service and postgraduate supervision through collaboration with other departments in the College of Human Sciences. It has specific targets that include transdisciplinary and transformative research in social skills. The institute supports the foundation of an innovative system in the theology and religion sections.

The RITR has a strong commitment to community engagement and disseminates the results of its research to various communities, making it possible for religions to make themselves known in a country with religious pluralism. It also seeks to attain this through collaboration with other departments within the College of Human Sciences and external partners. The RITR generates research and community engagement in the service of communities and developing religious policies that are in line with Unisa's policies on research institutes and centres.

The RITR launched the South African Science and Religion Forum in 1993 as a platform for interaction between science and spirituality, and it has been convening annually ever since. It has other crucial functional performance areas that include African Oral History, African traditional religion, African Instituted Churches (AICs) and the Africa Development initiative.

RITR host national and international conferences on contemporary issues in religious beliefs and convictions. Likewise, it hosts workshops on theological topics relating to

the evolution of theology in African continent and Diaspora. The institute's other interface with society is through the Forum of Religious Dialogue, which regularly presents research seminars on contextual issues.

The institute supervises master's and doctoral students and takes part in international, interdisciplinary research projects, encouraging the free interchange of research data.

During 2018, the institute produced 17 articles in peer-reviewed journals.

Prof Victor Molobi is the acting Head of the institute.



The institute supervises master's and doctoral students and takes part in international, interdisciplinary research projects, encouraging the free interchange of research data.



Research Chairs and Institutes



Professor Vusi Gumede

Thabo Mbeki African Leadership Institute (TMALI)

TMALI is a unique African institution which aims to invest in thought leaders to enable them to acquire particular skills and act as agents of progressive African change.

Launched as a partnership between Unisa and the Thabo Mbeki Foundation in 2010, TMALI is a vehicle for preparing the next generation of leaders for Africa's political, social, economic and cultural renewal. The institute's patron is Unisa Chancellor and former President Thabo Mbeki.

Research, teaching, learning and dialogue are its core activities, all characterised by a strong sense of African identity and commitment to the development of leadership on the continent. The TMALI International Advisory Committee, comprising 10 leading scholars on Africa, provides advice and input on the institute's research and academic activities.

TMALI offers six short learning programmes designed to inspire students to be change agents for Africa's renaissance. These programmes are Thought Leadership for Africa's Renewal; African Political Economy – The African Economic Challenge; Africa and International Trade – Building an African Development State; Good Governance in Africa; African Feminist and Gender Studies and Public Policy and Analysis for Africa's Development. Processes towards offering formal academic programmes have started and it is envisaged that TMALI would become a Graduate School.

In 2018, the institute published 12 articles in accredited journals, 23 book chapters and seven books. Four doctoral students and three master's students supervised by TMALI academics graduated in 2018. Academics at TMALI also guest edited two special issues of journals and two journals are edited by the head of the institute as editor-in-chief. The head of the institute is Professor Vusi Gumede.



TMALI is a vehicle for preparing the next generation of leaders for Africa's political, social, economic and cultural renewal. The institute's patron is Unisa Chancellor and former President Thabo Mbeki.



[BACK TO CONTENTS](#)



Students

07



**Professor Thenjiwe Meyiwa, Vice-Principal:
Research, Postgraduate Studies, Innovation and
Commercialisation, addressing students at the
Student Research and Innovation Showcase**

Student Research and Innovation Showcase

The annual Student Showcase, FameLab, engineering students' unstoppable prototype cars and a monitoring system designed to put a stop to femicide - these are but a few examples of Unisa students honing their research skills and putting innovative ideas to the test. In August 2018, for the seventh consecutive year, the annual Unisa Student Research & Innovation Showcase was held.

The Showcase is a joint initiative of the Unisa National Student Representative Council and the Research, Postgraduate Studies, Innovation and Commercialisation Portfolio and the event was held at the Sunnyside Campus from 13 to 17 August 2018. The objective of the event was to promote research and innovation among students.

In preparation for the 2018 Student Research & Innovation Showcase, a call for research papers was issued in February that year. Information sessions and workshops on how to write a research paper were held nationally at Unisa's sites and attracted more than 4 320 students.

A total of 92 research papers from undergraduates and postgraduates were received and reviewed by discipline-specific technical committees, who selected those considered to be of high quality for presentation during the Showcase.

Approximately 500 students attended the event, which consisted of student presentations, workshops and exhibitions. There were also pre-Showcase workshops on entrepreneurship, the basics of product design and presentation skills, as well as a motivational lecture.

The event included a discussion session on "The Land Debate: The Role of Higher Education Institutions", led by Precious Banda of the ANC's Young Women's Desk. Banda urged the young researchers to come to the fore and present potential solutions that advance the redress and redistribution land agenda of South Africa.

Dr Vukosi Marivate, Chair of Data Science at the University of Pretoria, delivered a thought-provoking lecture on the 4th Industrial Revolution (4IR). He spoke on 4IR's origins and on what South Africa and the African continent can do to engage and benefit from this revolution.



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Mud, guts and glory for Unisa motorsport design teams



Executive Dean Professor Bhekile Mamba and the entire College of Science, Engineering, and Technology (CSET) management congratulate the team of engineering students and staff that obtained the number one spot in the Mini Baja Competition held on 26 October 2018.



The students had three months to design their vehicles and in tandem with that received practical training in the skills they would need to fabricate the vehicles, including welding, machining and using workshop machines such as lathes and milling equipment.

Talk about a tall order: from the wheels up, design and build a prototype four-wheel, single-seater, off-road recreational vehicle that is safe, easy to transport, fun to drive and good looking. It should also be able to negotiate rough terrain and handle anything a recreational user will most likely put it through. And let's not forget that the participants themselves must generate the money for their project.

Apart from these specifications and certain minimum safety requirements, the rest was up to the initiative and ingenuity of the students participating in Baja SAE®, an engineering design competition for undergraduate and postgraduate engineering students.

Six cars, all designed and built from scratch, entered the 2018 Mini Baja Competition, three from Unisa and three from the University of Pretoria.

In designing and building their vehicles, the engineering students drew on what they had learnt in the lecture room. This link was critical as the Mini Baja project serves as an alternative to work-integrated learning (WIL), without which engineering students cannot graduate.

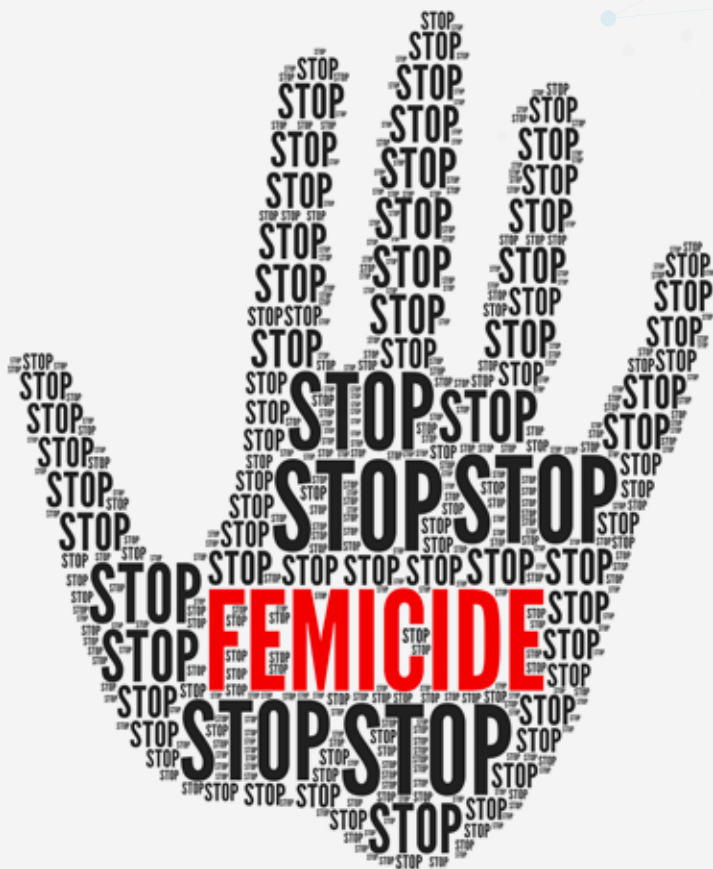
The students had three months to design their vehicles and in tandem with that received practical training in the skills they would need to fabricate the vehicles, including welding, machining and using workshop machines such as lathes and milling equipment.

They then had four months to fabricate their vehicles, taking special care with vehicle-specific systems such as roll cage, braking systems, drive train, steering and other systems required for compliance with the competition rules.

When race day dawned on 26 October 2018, the Unisa teams were raring to go and two ended up taking first and second places. The winning team was led by Dr Thembaleni Sithebe of the Department of Mechanical and Industrial Engineering. The entire management team of the College of Science,

Engineering and Technology (CSET), including the Executive Dean Professor Bhekile Mamba, were there to congratulate them.





We aim to have a prototype ready for marketing in around February 2020."

Students want to stop femicide in its tracks

Femicide must be stopped and one way to do that is to ensure that women targeted by aggressors have advance warning about possible harm coming their way, such as when a protection order is being breached and danger is imminent. Three Unisa students have come up with a novel idea to alert women – before they become victims of gender-based violence – to the proximity of a person against whom a protection order has been obtained.

These students, determined to play their part in stopping femicide in its tracks, are Lisa Jaison, a master's student in development studies, Siphesihle Jojo, an honours student in gender studies, and Lusanda Mkhutyukelwa, who has been taking various sociology short courses.

Their idea, which caught the eye of the judges of Unisa's annual Innovation Challenge for students, is to introduce a revolutionary system of electronic monitoring, specifically when a person bound by a protection order breaches it.

Breached protection orders would be the trigger

When a protection order is violated, the authorities would conduct a risk assessment and, if this indicates that the complainant could be in danger, would ensure that the person in breach would be fitted with a "dual monitoring ankle bracelet".

Should that person then again attempt to come within 100 metres of the complainant, the ankle bracelet would instantly send out a signal to this effect – to the complainant and a trusted third party.

"The idea is to select people who can come to your aid and help keep you safe," says Lisa Jaison, adding that the third party could be a friend, someone from the community, the local police station or, if the complainant can afford it, a security company.

"Perpetrators of domestic violence rely on the concept of isolation and the element of surprise to exercise power," she says. "Once you become protected by the community, it sends the message that the complainant is not the only one who is unhappy with the perpetrator's behaviour. Knowing that the complainant is not isolated and alone makes it harder for the perpetrator to get to her."

Developing the prototype

Jaison, Jojo and Mkhutyukelwa are already well on their way towards developing a prototype of their tracking system, using the grant funding they received after successfully participating in the Unisa Innovation Challenge of 2018.

Their prototype will consist of an ankle monitoring device, the software that goes with it, GPS for location monitoring and a reporting mechanism. Most of the components are already available – such as monitoring devices imported from America, where they are used to track parolees – and need to be put together and customised for African conditions. "For instance, we need to make sure that the devices link to current GPS settings for Africa," Jaison says.

"We aim to have a prototype ready for marketing in around February 2020," she says, adding that the three co-innovators plan to approach the South African Police Service, the Department of Justice and the Department of Social Development, among others.

The Unisa trio are well aware that laws – not to mention mind sets – might need to be changed to allow for a monitoring system of this kind. They are adamant that change is long overdue. "Perpetrators violate protection orders all the time, without consequences," says Jaison. "We have a list of women who had protection orders and were killed in 2018, some by police and prison officers – people who know the law and break it. It is time there were consequences."



Sebatatso held Unisa's name high at national FameLab finals

Taking part in the national finals of FameLab was a "terrifying experience" but one that will have lasting benefits, says Unisa PhD student Sebatatso Maifadi.

"I feel I'm more confident and can speak more convincingly about my work, and I'm going to use that in my own research and to encourage others," says Maifadi, who came second overall in FameLab South Africa 2018, held in Port Elizabeth on 4 May 2018.

FameLab is one of the biggest science competitions in the world and gives young scientists just three minutes to tell the audience and a panel of judges about their research. The national winner is chosen to represent South Africa at the international finals in the United Kingdom.

Maifadi, who was up against 13 other contestants from universities around the country, including Wits, Fort Hare, Cape Town, Pretoria, Free State and Limpopo, drew on what she had learnt during FameLab coaching sessions to win over the judges and avoid pitfalls.

“

I feel I'm more confident and can speak more convincingly about my work, and I'm going to use that in my own research and to encourage others."

"When we were being coached, they told us not to crack jokes unless you are good at it. It's important not to try and be somebody you are not. Apparently, I am a good story-teller and come across as relaxed, as if I'm having a conversation."

She used those strengths and her passion for her field to tell the audience about the water research she does as part of the Nanotechnology and Water Sustainability (NanoWS) Research Unit at the College of Science, Engineering and Technology. "I am testing waste water from beauty salons to find out what is in the water and come up with a nanotechnology membrane system to clean the water and allow salons to reuse it or at least discharge water with fewer contaminants into the environment."



FameLab Participants

Unisa master's students win prestigious WISA awards

Sikelelwa Ndaweni and Sonia Kiangala, both master's students at Unisa, won the South African Woman in Science Awards (WISA) Tata Africa Scholarships for Women in Science, Engineering and Technology for master's students for 2018. The prizes were scholarships worth R75 000.

Ndaweni is registered with the Nanotechnology and Water Sustainability (NanoWS) Research Unit, and carried out part of her research at Ghent University in Belgium, while Kiangala is part of the Department of Electrical and Mining Engineering. They received their awards at a ceremony hosted and sponsored by the then Minister of Science and Technology, Mmamoloko Kubayi-Ngubane.



Sikelelwa Ndiweni



Sonia Kiangala

Less talk and more action on doing research

"You learn how to cut down trees by cutting them down," says a Bateke proverb - an attestation of the strategic revamp and approach of the 6th Annual Interdisciplinary Academy, formerly referred to as the Interdisciplinary Summer School.

The name of the 2018 event was not the only shift. Another was the shift from just talking about research to practically doing research under the guidance of nationally and internationally acclaimed scientists.

The Academy, spearheaded by the College of Graduate Studies, took place from 28 to 30 May 2018 at the Unisa Science campus in Johannesburg.

Recognised as a strategic project, the Academy has the objective of increasing the number and quality of master's and doctoral graduates produced by the institution. In the next five years, the Academy will expand into a more ongoing

interaction between researchers and students in the six streams of Men and Violence, Social Protest, Drug Discovery, Cosmology, Water Scarcity and Sustainable Energy.

Participants, registered at Unisa and other universities, will acquire practical and applied knowledge and skills in designing, conducting and presenting innovative solutions that are research based.

"The future plan for the academy is to go beyond proposals and start focusing on research as teamwork in order for participants to publish with other authors and to develop a research environment," said Prof Kopano Ratele, co-project leader.





[BACK TO CONTENTS](#)



Highlights

08



Highlights of 2018

2018 was a year of many highlights confirming the university's research excellence and researchers' outstanding performance. This section features some of the highlights.

First for Africa in nanoscience and nanotechnology

The holding of the first African Chapter of the International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-Africa) has firmly established Unisa's and Africa's standing in the fields of nanoscience and nanotechnology.

In November 2018, about 300 mostly African delegates gathered in Cape Town for the conference, which was a joint venture by Unisa, the NANOSMAT Society, NRF iThemba Labs, the United Nations, the UNESCO/Unisa partnership, the Abdus Salam International Centre for Theoretical Physics (ICTP) and the South African Department of Science and Technology.

Professor Malik Maaza, holder of the UNESCO-Unisa Africa Chair in Nanosciences and Nanotechnology, in collaboration with iThemba Labs, worked tirelessly to produce a world-class conference that was decidedly African.

Among the speakers was Professor Ameenah Gurib-Fakim, former President of the Republic of Mauritius and a world authority in phytochemistry. He focused on agriculture and health in driving economic growth in Africa, as well as on the pivotal role of innovation.

Professor Gansen Pillay, Deputy CEO of Research and Innovation Support and Advancement at the NRF, emphasised the contribution Africa is making to scientific research and referred to initiatives such as the African Large Telescope (SALT) near Sutherland and MEERKAT, the world's biggest radio telescope and part of the future Square Kilometre Array (SKA) near Carnarvon.

Dr Romilla Maharaj, Executive Director of the NRF, looked at the implementation of the South African National Nanotechnology Strategy. Going forward, the foundation aims to support long-term nanoscience research and the creation of novel nanotechnology applications, develop the human and capital infrastructure needed for technology development, and stimulate new research in advanced materials.

During the conference, the *Scientific African Journal* was introduced. This quarterly publication is multidisciplinary, open access and fully peer reviewed. Published by Next Einstein Forum in partnership with Elsevier, it aims to provide Africa's scientists with a platform to publish and share their breakthrough research.



Approximately 300 delegates from all over the world, but mostly from Africa, gathered at the iconic Lord Charles Hotel in Somerset West near Cape Town for the first-ever African Chapter of the established International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-Africa).



Professor Godwell Nhamo

Exxaro Chair renewed for the third time

The Exxaro Chair in Business and Climate Change which is hosted by the Institute for Corporate Citizenship under the College of Economic and Management Sciences, was renewed for the third time in 2018. The incumbent of the Chair, Professor Godwell Nhamo, has been directing it since August 2009 at Unisa.

The Chair has been awarded R12 483 million over a five-year period and the first instalment of R1 966 million came in on 16 November 2018.

Nhamo says that the renewal of the Exxaro Chair for the third time in a row tells a bigger story. "It tells of a story of family support, Unisa support, the Exxaro Chair Advisory Board support, and societal support at large. Without such support, it would be impossible to perform and make potential funders like the Exxaro Chairman's Fund give their stamp of approval in succession as they have done."



Professor Malik Maaza

Notable awards

Awards and similar forms of recognition are proof positive that Unisa's researchers are addressing societal challenges and influencing policy and practice while contributing to transformation, be it political, social, economic or cultural.

External research awards

Trio of awards for nanosciences chair holder

Professor Malik Maaza, holder of the Unesco-Unisa Africa Chair in Nanosciences and Nanotechnology, received three major awards in 2018 for his contribution in the field. These were the José Vasconcelos World Award of Education, the 2018 African Union Kwame Nkrumah Award for Scientific Excellence and the NSTF-GreenMatter Award at the 2017/2018 NSTF-South32 awards.

Maaza, who is also senior scientist of the NRF iThemba Laboratory for Accelerator Based Sciences, received the José Vasconcelos Award during the 35th World Cultural Council Award Ceremony in Hong Kong in November 2018. The award acknowledges his efforts to promote education for societal development and sustainability and his commitment to training and mentoring young scientists. This includes creating platforms for emerging areas of education such as material science, space sciences, and laser sciences.

Accepting the award, Maaza said it was not a personal achievement so much as recognition of African excellence.

Further acknowledgment of his contribution to the development of nanoscience and nanotechnology on the African continent came when the African Union Kwame Nkrumah Award for Scientific Excellence was presented to Maaza and fellow scientist Robert Miller during the African Union Summit in Addis Ababa in January 2018.

The NSTF-South32 Awards, the largest and most sought-after national awards of their kind, recognised Maaza's work towards biodiversity conservation, environmental sustainability, and a greener economy. He has been a pioneer in the field of green nanochemistry, demonstrating the effectiveness of natural extracts from indigenous plants as powerful chelating agents and broadening the green nanochemistry topic.

In addition to doing his own research, mentoring young scientists and building relations with academics and in industries nationally and globally, Maaza actively promotes the cause of women in science, especially those living in low and medium-income countries. Among others, he is a member of the international and sub-Saharan juries of the L'Oréal-Unesco Award for Women in Science.



It was not a personal achievement so much as recognition of African excellence."



Professor Jane Carruthers

American award for environmental history goes outside US for the first time

South African environmental historian Professor Jane Carruthers has become the first person outside the United States to receive a Distinguished Scholar Award from the American Society for Environmental History. Carruthers, Emeritus Professor in the Department of History at Unisa and a Research Associate of the Centre for Invasion Biology at the University of Stellenbosch, received the 2018 award for her contribution to environmental justice, national parks preservation and transnational history.

Only the second woman to receive this prestigious award, Carruthers' pioneering scholarship on the Kruger National Park, published in 1995, engaged political and social history, along with the history of nationalism. Her work challenged park historians to consider environmental justice and dispossession, as well as preservation and recreation in national parks, and to consider the impact of parks beyond their immediate borders.

She has advised South African National Parks on the human side of preservation efforts and has collaborated with biologists and ecologists to engage policy-making. Her extensive research across South Africa and abroad has transformed, and at times unsettled, environmental understandings of science, national parks and wildlife management. It has also come with its challenges.

When receiving the award in June 2018, Carruthers alluded to her isolation as an environmental historian in apartheid South Africa. Her revisionist history of the Kruger National Park was well received internationally but not at home where she was harshly criticised.

The support she received internationally was some consolation. Carruthers was founding President of the International Consortium of Environmental History Organisations based at Duke University and Chair of the Rachel Carson Centre for Environment and Society in Munich.

Carruthers was also the first female president of the Southern African Historical Society.

She may have retired from Unisa in 2012, but her impact on academia continues through, among others, her position as Editor-in Chief of the South African Journal of Science.



Her revisionist history of the Kruger National Park was well received internationally but not at home where she was harshly criticised.



Professor Mpine Makoe

Serving on Botswana Open University Council

Professor Mpine Makoe of the School of Transdisciplinary Research Institutes (STRI) in the College of Graduate Studies was appointed to serve as a member of the Council of the new Botswana Open University for three years.



Erica Flinspach

Putting Unisa on the global academic integrity map

At a mega-university the size of Unisa, the sheer weight of student numbers potentially magnifies the risk that plagiarism and other forms of academic dishonesty will occur. Yet the university has succeeded in dramatically decreasing plagiarism while increasing awareness around the concept of academic integrity.

This is according to plagiarism-detection service Turnitin, which was so impressed with Unisa's effective use of the tool that it named Erica Flinspach, administrator of Turnitin and iThenticate at the university, as its Global Innovator of 2018. Flinspach has been Turnitin champion at Unisa for the past 10 years, when use of the tool was still "uncharted territory" in South Africa, says Professor Shawren Singh of the Unisa School of Computing – the person who initially nominated her for the award.

"Erica took on the challenge and today is seen as one of the experts in interpreting Turnitin reports. Other universities call her and ask for her advice. She has deep, deep expertise on how to use Turnitin," says Singh.

"Where she has been innovative is in taking the tool to the open and distance learning (ODL) environment and setting up really nice procedures that make the tool easy to use," he says. "Unisa has thousands and thousands of PhD, master's and honours students and all of them have Turnitin. That is a huge achievement."

On the strength of all this, Singh nominated Flinspach for Turnitin's Middle East and Africa Academic Integrity Award 2018, for which nearly 900 nominations were received. She won.

Next, Flinspach went through to the global round, competing against the winners from the six other regions, namely Asia, Australia and New Zealand, Europe, Latin America and Caribbean, North America and Canada, and United Kingdom and Ireland.

She emerged as the overall Global Innovator – an accolade that Turnitin says demonstrates exceptional commitment to academic integrity in the ever-changing education landscape. Says Singh, without whose nomination the award would not have come to Flinspach and Unisa: "When people do good work, you've got to recognise it."



Unisa has thousands and thousands of PhD, master's and honours students and all of them have Turnitin. That is a huge achievement.





Suvania Naidoo

Internal awards

Principal's Prize for Excellence in Research

Acid mine drainage in South Africa has become a threat to the environment, which poses a direct risk on the Vaal River System, says Suvania Naidoo, lecturer in Development Studies in the College of Human Sciences.

A recipient of the 2018 Principal's Prize for Excellence in Research, Naidoo aims to link the natural and social sciences, by contributing her knowledge of the socio-economic impacts of acid mine drainage and its treatment through public platforms and her research publications.

Previously, for her master's thesis, she investigated acid mine drainage in the three basins of the Witwatersrand, including how various stakeholders define the problem and what the implications for policy are. Her research was subsequently published in a book titled, *AMD in South Africa: Development*

Actors, Policy Impacts and Broader Implications, by Springer International in 2017.

Now a PhD candidate, she is investigating water management and public policy surrounding the impact of mining on communities and the environment. Her focus is on the social constructions of water quality of the Blesbokspruit wetland, in the East Rand, Gauteng, with specific context to acid mine drainage and its treatment.

Acid mine drainage is not a phenomenon that is unique to South Africa. "It also occurs in other countries that are rich in minerals such as Germany, Canada and Australia" says Naidoo, who presented a paper at an international social sciences conference in 2018 in Milan, Italy.

Naidoo serves on the executive committee of the Klipriviersberg Sustainability Association (KLIPSA), which deals with environmental conservation in the Johannesburg South Area.



Dr Safia Mahomed

Principal's Prize for Excellence in Research

Biobanks containing human tissue and other biological material can be an invaluable resource for medical research but must be properly regulated to ensure ethical use. Dr Safia Mahomed, senior lecturer at Unisa's School of Law, is helping to ensure that biobanking in South Africa is approached in a way that respects and protects the rights of the people whose tissue they are storing.

"Complexities associated with biobank research are far-reaching and range from social and ethical issues to legal," says Mahomed, who is deeply committed to protecting the rights of the people and communities concerned.

Her research on the legal regulation of biobanks in South Africa has been translated into policy. Her work forms the backbone of the Material Transfer Agreement (MTA) of Human Biological Materials that the national Department of Health published in the Government Gazette for public comment in July 2018.

"Even though biobank research is already incorporated (to a limited extent) into national ethical guidelines, its complexities call for the establishment of firm principles," says Mahomed. This is especially necessary with regard to informed consent and secondary uses, ownership of materials, privacy and confidentiality, benefit sharing and cross-border transfer requirements.

In addition to addressing ethico-legal principles, the MTA incorporates broad consent and benefit sharing and contains provisions on termination of research projects, dispute resolution and publication rights for local researchers.

Mahomed, who received her PhD from the University of the Witwatersrand in July 2018, chairs the Biotechnology and Medical Law Flagship Project within the College of Law. "My hope is that this research will provide protection to the most vulnerable populations in society."



Professor Lindelani Mnguni

Principal's Prize for Excellence in Research

The time has come for an education revolution, says Professor Lindelani Mnguni, a researcher with a powerful picture of the future of education.

An education activist of note, Mnguni is the Chair of Department: Science and Technology Education in the College of Education and a recipient of the 2018 Principal's Prize for Research Excellence.

All South Africans have the right to education, which should include access to high-quality learning and teaching support material, he says. To ensure that this becomes a reality for the disadvantaged majority, Mnguni has dedicated his research to teacher education.

One of his research interests is how best to teach life sciences to school learners in Grades 10 to 12 and university students. For the subject to find traction among 21st century learners, he is looking at the use of visual models such as computer simulations and animations.

In another research project he looks into the curriculum design in the African context and explores the relevance of science in everyday life.

In 2014, Mnguni wrote a paper titled "The theoretical cognitive process of learning using visual models," which discusses what generally happens to a person's brain when they learn using pictures.

The paper, published in the Netherlands, has already been downloaded more than 3 900 times.

Mnguni has been a key member of a number of national and international collaborations. He has worked on a paper about visual literacy with Trevor Anderson, a professor in Biochemistry Education at Perdue University in the United States, and with Konrad Schonborn, an associate professor of Visualisation and Media Technology from Linkoping University, Sweden. He has also worked with colleagues from the University of Pretoria, University of Johannesburg and the Tshwane University of Technology.

He has collaborated with colleagues from Indonesia on a paper about the relevance of the curriculum from a comparative perspective of South Africa and Indonesia.

He has also embarked on a joint research project with scholars from Uppsala and Umea, universities in Sweden and locally with academics from Nelson Mandela University and the University of Zululand.



He has worked on a paper about visual literacy with Trevor Anderson, a professor in Biochemistry Education at Perdue University in the United States, and with Konrad Schonborn, an associate professor of Visualisation and Media Technology from Linkoping University, Sweden.

Define tomorrow.

