



June 2019

GRADUATION CEREMONY

BLOEMFONTEIN
CAMPUS

Faculties of Health Sciences and
Natural and Agricultural Sciences
Master's and Doctoral Degrees

FRIDAY, 28 JUNE 2019 | 13:30



UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

PROGRAMME

CALLIE HUMAN CENTRE, BLOEMFONTEIN CAMPUS

CONSTITUTION OF THE CONGREGATION

Chancellor
Dr K Mokhele

OFFICIAL WELCOME

Rector and Vice-Chancellor
Prof FW Petersen

INTRODUCTION OF GUEST SPEAKER

Vice-Rector: Research
Prof RC Witthuhn

GUEST SPEAKER

Former Minister: Finance and Chairman: Old Mutual Group Holdings
Dr TA Manuel

MUSICAL ITEM

Rock Medley
Arranged by A Esterhuyse
Performed by Ms H Möller-Bashew and Mr A Esterhuyse

PRESENTATION OF CANDIDATES

Deans of the Respective Faculties

AWARDING AND CONFERMENT OF QUALIFICATIONS

Chancellor
Dr K Mokhele

PRESENTATION OF MEDALS

Deans of the Respective Faculties

PRESENTATION OF RECIPIENT OF AN HONORARY QUALIFICATION

Dean: Faculty of Natural and Agricultural Sciences
Prof PD Vermeulen

CONGRATULATORY MESSAGE

Chancellor
Dr K Mokhele

NATIONAL ANTHEM OF SOUTH AFRICA

Led by Dr M Thom-Wium and accompanied by the Graduation Instrumental Ensemble
under the direction of Mr A Esterhuyse

DISSOLUTION OF THE CONGREGATION

Chancellor
Dr K Mokhele

28 JUNE 2019 | 13:30



NATIONAL ANTHEM OF SOUTH AFRICA

Nkosi sikelel' iAfrika

Maluphakanyisw' uphondo lwayo,
Yizwa imithandazo yethu,
Nkosi sikelela, thina lusapho lwayo.
Morena boloka setjhaba sa heso,
O fedise dintwa le matshwenyeho,
O se boloke, O se boloke setjhaba sa heso,
Setjhaba sa South Afrika -
South Afrika.
Uit die blou van onse hemel,
Uit die diepte van ons see,
Oor ons ewige gebergtes,
Waar die kranse antwoord gee,
Sounds the call to come together,
And united we shall stand,
Let us live and strive for freedom,
In South Africa our land.

In order to maintain the dignity of the ceremony, you are requested to take note of the following:

- | | |
|---|---|
| <ul style="list-style-type: none">• Please stand as the procession enters the hall• Do not move around during the ceremony in order to take photos• Please refrain from unacceptable actions such as whistling• Please put your cellphone on silent so as not to disturb the proceedings• We strive to conduct the ceremonies in a dignified manner | <ul style="list-style-type: none">• Please do not leave the hall before the graduation proceedings have been concluded• Family and friends unable to attend may watch the full graduation ceremonies through our livestream link at http://livestream.ufs.ac.za. |
|---|---|

ABOUT THE UFS

The University of the Free State (UFS) is one of the oldest institutions of higher education in South Africa.

It opened its doors in 1904 in Bloemfontein as the Grey University College, with six students in the Humanities. Since then, the institution has grown to more than 40 000 students, spread over three campuses and across seven faculties (Economic and Management Sciences, Education, Health Sciences, the Humanities, Law, Natural and Agricultural Sciences, Theology and Religion).

Most of the students are located on the Bloemfontein Campus, with the Qwaqwa Campus situated in the picturesque Eastern Free State, serving a rapidly-growing number of rural students from the immediate area and surrounding provinces. The South Campus – also situated in Bloemfontein – serves as the centre for distance-learning programmes offered by the UFS, as well as alternative access to higher education for promising students who have not obtained the required marks in their final school examinations.

Over the years, the university has grown into an education hub which has positioned itself on the global stage, promoting research excellence, with exceptionally talented scholars and students who are recognised the world over, as well as alumni who have grown into influential leaders in society.



DEVELOPMENT OF THE UFS CREST OVER MORE THAN A CENTURY



1904

Up to 1935, the same coat of arms was used as the Grey College School.



1935

By 1935, with the name change to University College of the Orange Free State, the coat of arms fell into disuse, especially among students.



1947

In 1947, an agreement between management and students led to the new motto Per Fidem ad Sapientiam (Through faith to wisdom).



1950

In 1952, it was changed to In Deo Sapientiae Lux (In God is the light of wisdom). The traditional orange, white and blue, linking the UFS to the South African national colours, changed in the late 1990s. The orange was replaced by cherry red.



2011

The academic brand – the historic University of the Free State crest that has been the symbol of the university since 1952, has evolved to embrace the aesthetic expectations of the stakeholders. The shape of the traditional academic shield has been simplified and contemporised. Much of the symbolism of the crest remains intact, acknowledging the location of the UFS brand as one of the country's premier institutions of higher education, with a proud history of academic excellence and an ever-evolving, vibrant culture.

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA



GRADUATION CEREMONY 2019

Honorary Awards | Honorary Doctorates

1950	GLP Moerdyk – DLitt (h.c.)				
1951	NC Havenga – LLD (h.c.)				
1952	Thos Blok – DEd (h.c.)				
	SHS Rubidge – DSc (h.c.)				
1955	CR Swart – LLD (h.c.)				
	CA v Niekerk – LLD (h.c.)				
1958	CPB Brink – LLD (h.c.)				
	CF Visser – DEd (h.c.)				
1959	DB Bosman – DLitt (h.c.)				
	SP le Roux – DScAgric (h.c.)				
	DF Malherbe – DLitt (h.c.)				
	GH v Rooyen – MA (h.c.)				
1960	SPE Boshoff – DLitt (h.c.)				
1961	T Boydell – DPhil (h.c.)				
1962	ES Botes – DEd (h.c.)				
	PE Rousseau – DSc (h.c.)				
1963	EH Louw – LLD (h.c.)				
	EN Roberts – DSc (h.c.)				
	JGF (Kaalkop) vd Merwe – DCom (h.c.)				
	HF Verwoerd – DLitt et Phil (h.c.)				
1966	PSZ Coetzee – DPhilTh (h.c.)				
	PJ du Toit – DSc (h.c.)				
	MS Louw – DCom (h.c.)				
1967	SM Naudé – DSc (h.c.)				
	LC Steyn – LLD (h.c.)				
	BJ Vorster – LLD (h.c.)				
1968	SJ Naudé – DCom (h.c.)				
1969	CW (Nellie) Swart – DPhil (h.c.)				
	AJJ Wessels – DCom (h.c.)				
1970	GS Nienaber – DLitt (h.c.)				
	HO Mönnig – DSc (h.c.)				
1971	N Diederichs – DCom (h.c.)				
	RS Verster – DPhil (h.c.)				
1972	LW Hiemstra – DPhil (h.c.)				
	PJ Meyer – DPhil (h.c.)				
1975	PJ Nienaber – DLitt (h.c.)				
	De la H de Villiers – DScAgric (h.c.)				
	GJ Stander – DSc (h.c.)				
1976	AJA Roux – DSc (h.c.)				
1978	SP Botha – DSc (h.c.)				
	EM van Zinderen Bakker – DSc (h.c.)				
	HB Thom – DEd (h.c.)				
1979	FCL Bosman – DPhil (h.c.)				
	G Cronjé – DSocSc (h.c.)				
	CJF Human – DCom (h.c.)				
1980	G Boonzaier – DPhil (h.c.)				
1981	PW Botha – DPhil (h.c.)				
	B Human – DCom (h.c.)				
	SG Shuttleworth – DSc (h.c.)				
1982	BLS Franklin – DPhil (h.c.)				
	GvN Viljoen – DEd (h.c.)				
1983	L Luyt – DCom (h.c.)				
	SF Zaaïman – DPhil (h.c.)				
1984	HS Steyn – DSc (h.c.)				
	FR Tomlinson – DScAgric (h.c.)				
	JH vd Berg – DMed (h.c.)				
1985	L Alberts – DSc (h.c.)				
	GG Cillie – DPhil (h.c.)				
	SPD le Roux – DLitt (h.c.)				
	A Polson – DPhilMed (h.c.)				
1986	J du P Scholtz – DPhil (h.c.)				
	S Grové – DMus (h.c.)				
	FP Retief – DMed (h.c.)				
	JA Stegmann – DCom (h.c.)				
1987	WA Joubert – LLD (h.c.)				
	B Kok – DPhil (h.c.)				
	WP Venter – DCom (h.c.)				
1988	JJN Cloete – DAdmin (h.c.)				
	FC Fensham – DLitt (h.c.)				
	JW vd Riet – DPhil (h.c.)				
1989	BJ Meyer – DSc (h.c.)				
	N van Uden – PhD (h.c.)				
1990	MG Corbett – LLD (h.c.)				
	JS Rabie – DLitt (h.c.)				
1991	SS Brand – DCom (h.c.)				
	JWL de Villiers – DSc (h.c.)				
	GT Fagan – DArch (h.c.)				
	JH Hofmeyer – PhD (h.c.)				
	E v Heerden – DLitt (h.c.)				
1992	JP Louw – DLitt (h.c.)				
	H Olivier – DSc (h.c.)				
1993	JD Anderson – DMed (h.c.)				
	RR Arndt – DSc (h.c.)				
	SJ Naudé – LLD (h.c.)				
1994	JJ Human – DPhil (h.c.)				
	JA Myburgh – DMed (h.c.)				
	JP vd Walt – DSc (h.c.)				
1995	WA Landman – DEd (h.c.)				
	WL Mouton – DPhil (h.c.)				
1996	WDO Marasas – DSc (h.c.)				
	NE Wiehahn – LLD (h.c.)				
1997	AP Brink – DLitt (h.c.)				
	B Hurwitz – DPhil (h.c.)				
1998	FC Müller – DMed (h.c.)				
1999	FM Claerhout – DPhil (h.c.)				
	JJF Hefer – LLD (h.c.)				
	S Nigam – DSc (h.c.)				
	WL Nkuhlu – DCom (h.c.)				
	MA Ramphela – DPhil (h.c.)				
	HJO van Heerden – LLD (h.c.)				
	FJ van der Merwe – PhD (h.c.)				
2000	MH Daling – DCom (h.c.)				
	TN Liversedge – PhD (h.c.)				
	I Mahomed – LLD (h.c.)				
2001	BP Gilbertson – DCom (h.c.)				
	NR Mandela – LLD (h.c.)				
	EC Taglauer – DSc (h.c.)				
2002	BH Meyer – PhD (h.c.)				
	BAK Rider – LLD (h.c.)				
	CF Slabber – PhD (h.c.)				
	JM Stetar – DEd (h.c.)				
2003	EWA de Corte – DEd (h.c.)				
	HA Serebro – DPhil (h.c.)				
	AG Sykes – DSc (h.c.)				
2004	S Badat – DPhil (h.c.)				
	R Bringle – DPhil (h.c.)				
	J de Wet – DMus (h.c.)				
	CF Fauconnier – DSc (h.c.)				
	GJ Gerwel – DPhil (h.c.)				
	WD Jonker – DTh (h.c.)				
	A Krog – DLitt (h.c.)				
	K Mokhele – DPhil (h.c.)				
	CJC Nel (Postuum) – PhD (h.c.)				
	L Quayle – DMus (h.c.)				
	T (Karel) Schoeman – DLitt (h.c.)				
	YK Seedat – DMed (h.c.)				
	MK Seely – DSc (h.c.)				
	C Seerveld – DPhil (h.c.)				
	F van Z Slabbert – DPhil (h.c.)				
	JC Steyn – DLitt (h.c.)				
	PA Verhoef – DTh (h.c.)				
	L van den Heever – LLD (h.c.)				
	HA Wessels – LLD (h.c.)				
2005	A du P Heyns – DMed (h.c.)				
	JJF Durand – DPhil (h.c.)				
	JA Groenewald – DSc (h.c.)				
	WH Neuser – DTh (h.c.)				
	M Ramos – PhD (h.c.)				
	SJ Terreblanche – DCom (h.c.)				
2006	T Moss – PhD (h.c.)				
	PV Cox – PhD (h.c.)				
2007	BJ (Bannie) Britz – DArch (h.c.)				
	KPD Maphalla – PhD (h.c.)				
2008	D Ferreira – DSc (h.c.)				
2009	JC Look – PhD (h.c.)				
	LTC Harms – LLD (h.c.)				
2010	P Gordhan – PhD (h.c.)				
	BBS Ngubane – PhD (h.c.)				
	AH Strydom – PhD (h.c.)				
	M Jones – PhD (h.c.)				
2011	D Tutu – DTh (h.c.)				
	P Fourie – DLitt (h.c.)				
	OG Winfrey – DEd (h.c.)				
	RWM Frater – PhD (h.c.)				
	A Sawyer – DEd (h.c.)				
2012	RJ Goldstone – LLD (h.c.)				
	ER v Heerden – DLitt (h.c.)				
	M Nussbaum – DLitt (h.c.)				
	OW Prozesky – MD (h.c.)				
	FDJ Brand – LLD (h.c.)				
2013	ZKG Mda – DLitt (h.c.)				
2014	ML Blum – PhD (h.c.)				
	L Mulvey – DLitt (h.c.)				
2015	L Brahimi – DPhil (h.c.)				
	JM Samuel – DEd (h.c.)				
	MA Oduyoye – DTh (h.c.)				
	JD Sacks – DEcon (h.c.)				
2016	RJ Khoza – DEcon (h.c.)				
	TA Manuel – DEcon (h.c.)				
	M du Preez – PhD (h.c.)				
	J Samoff – DPhil (h.c.)				
	F Haffajee – PhD (h.c.)				
2017	PH Holloway – DSc (h.c.)				
	M Botha – LLD (h.c.)				
2019	BL Fanaroff – DSc (h.c.)				
	J Mofokeng wa Makhetha – DLitt (h.c.)				
	MB Molemela – LLD (h.c.)				

Shields of Honour, Council and Chancellor's Medals

1994	Prof FO Müller (Shield of Honour)	2003	Prof HC Janse van Rensburg (Council's Medal)
	RE Schoombie (Shield of Honour)		Prof SA Petersen (Shield of Honour)
1995	Prof FO Müller (Chancellor's Medal)	2008	Ludo Helsen (Shield of Honour)
	RE Schoombie (Chancellor's Medal)	2009	Prof JU Grobbelaar (Council's Medal)
1996	Prof S Mittman (Shield of Honour)	2010	Mrs AM Dippenaar (Chancellor's Medal)
1997	Prof M Jansens (Shield of Honour)	2014	Dr H Verster (Chancellor's Medal)
1998	Prof CJC Nel (Chancellor's Medal)	2014	Mr JL Pretorius (Chancellor's Medal)
	Prof C Swanepoel (Chancellor's Medal)	2016	Mr AD Osler (Chancellor's Medal)
1999	WJ (Hansie) Cronje (Shield of Honour)		Ms M van der Merwe (Chancellor's Medal)
	Prof David Justice (Shield of Honour)	2017	Ms JS Isaacs (Chancellor's Medal)
2000	Prof P Rosseel (Shield of Honour)	2019	Mr JF de Villiers (Chancellor's Medal)
	Prof MJ Viljoen (Chancellor's Medal)		Ms EM Oosthuizen (Council Medal)
2001	Prof PC Potgieter (Chancellor's Medal)		
2002	T Moss (Shield of Honour)		
	Prof CD Roode (Chancellor's Medal)		

MESSAGE FROM THE RECTOR AND VICE-CHANCELLOR

Dear Student

Congratulations on obtaining your degree! As a postgraduate student, you have become part of a fraternity of exceptional individuals who have graduated before you at the University of the Free State (UFS). Graduation is a significant and memorable day and a culmination of the time you spent here at the UFS.

As a university recognised for academic excellence and quality education, we are proud to confer this degree upon you and we salute you for the years of hard work, perseverance, and dedication.

I acknowledge and thank those who are here with you today and those who have helped you along the way to this big day – including your promoter, fellow students, friends, and loved ones – in applauding you for all the hard work and perseverance that has made this moment possible. Enjoy and celebrate this exceptional day with family and friends.

I wish you every success as you enter this exciting next stage of your life and career; I invite you to stay connected with Kowsies in the years to come, and to give back by supporting your alma mater. The continued involvement of our alumni strengthens the special community of alumni of this 115-year old university.

When looking back at your time at the UFS, may you experience a great sense of achievement, knowing that you had a challenging and enriching learning experience.

The UFS is, after all, a place that inspires excellence and transforms lives.

I wish you well in your career and with your future endeavours.

PROF FW PETERSEN
RECTOR AND VICE-CHANCELLOR

Beste Student

Baie geluk met die verwerwing van jou graad! As nagraadse student het jy deel geword van 'n gemeenskap van uitsonderlike individue wat voor jou aan die Universiteit van die Vrystaat (UV) gegradueer het. Jou gradeplegtigheid is 'n betekenisvolle en onvergeetlike dag en 'n hoogtepunt van die tyd wat jy hier aan die UV deurgebring het.

As 'n universiteit wat erken word vir akademiese uitnemendheid en gehalte-onderrig, is ons trots om hierdie graad aan jou toe te ken en ons bring hulde aan jou vir die jare van harde werk, deursettingsvermoë en toewyding.

Ek gee erkenning aan en bedank diegene wat vandag saam met jou hier is en diegene wat jou gehelp het op die pad na hierdie groot dag – onder wie jou promotor, medestudente, vriende en geliefdes – om jou te loof vir al die harde werk en deursettingsvermoë wat hierdie oomblik moontlik gemaak het. Geniet en vier hierdie uitsonderlike dag saam met jou familie en vriende.

Ek wens jou alle sukses toe waar jy hierdie opwindende nuwe fase van jou lewe en loopbaan betree; ek nooi jou om in die komende jare met Kowsies in verbinding te bly en om iets terug te gee deur jou alma mater te ondersteun. Die voortgesette betrokkenheid van ons alumni versterk die spesiale gemeenskap van alumni van hierdie 115-jaar-oue universiteit.

Wanneer jy terugkyk op jou tyd by die UV, mag jy 'n wonderlike gevoel van prestasie beleef, wetende dat jy 'n uitdagende en verrykende leerervaring gehad het.



Die UV is immers 'n plek wat uitnemendheid inspireer en lewens verander.

Ek wens jou alles van die beste toe met jou loopbaan en met jou toekomstige ondernemings.

PROF FW PETERSEN
REKTOR EN VISEKANSELIER

Moithuti ya kgabane

Ke a o lebohisa ha e le mona o fumane dikeri tsa hao. Jwalo ka moithuti wa lengolo le phahameng, o e mong wa batho ba ipabotseng ka makgabane jwalo ka ba ileng ba apara pele ho wena mona Yunivesithing ya Freistata. Letsatsi la dikapeso ke la bohlokwa mme le a hopoleha ebile ke tlokola ya nako eo o phetseng mona Yunivesithing.

Jwalo ka yunivesithi e tsebahalang ka mosebetsi wa thuto e tswileng matsoho le ka thuto ya boleng bo phethahetseng, re motlotlo ho nehelana ka dikeri ena ho wena mme re o rolela kgaebana ka mosebetsi o matla wa dilemolemo, ka mamello le boitelo tseo o bileng le tsona.

Ke ananela le ho leboha bohle ba tllileng le wena kwano kajeno le bohle ba ileng ba tsamaya tsela ena le wena ho tla fihla letsatsing lena le lehlo – ke kenyeletsa le morupedi wa hao, ba mophato, metswalle le bang ka wena- tebohisong ya mosebetsi wa hao o matla ekasitana le mamello tse entseng hore o fihle motsotsong ona.

Ke o lakaletsa katleho ka tsohle jwalo ka ha o kena sebaeng se setjha bophelong le mosebetsing wa hao, mme ke o mema ho hlola le Makofsi mengwaheng e tlang, o kenye letsoho mohomeng ka ho tseheletsa mokgatlo wa baithuti ba nako e fetileng. Kabelo ya hao ya ka nako tsohle, e matlafatsa mokgatlo ona wa baithuti ba nako e fetileng, o seng o na le dilemo tse 115.

Ha o hetla, o sheba morao moo o tswang teng le Yunivesithi ya Freistata, ako be le maikutlo a monate a katleho, hobane o tseba diphepetso tseo o fetileng ho tsona le boleng ba thuto eo o e fumaneng.

Yunivesithi ya Freistata, hara tse ding, ke sebaka se kgothaletsang boipabolo mme se fetolang maphelo a rona.

Ke o lakaletsa botle mosebetsing le mererong ya hao ya ka moso.

MOPROFESARA FW PETERSEN
MOREKTORO LE MOTLATSA – MOKANSELIRI

VISION

The University of the Free State is a research-led, student-centred and regionally-engaged university that contributes to development and social justice through the production of globally competitive graduates and knowledge.

MOTTO

IN VERITATE SAPIENTIAE LUX

(In Truth is the Light of Wisdom)

OFFICE BEARERS



CHANCELLOR
Dr K Mokhele
PhD (UCD,USA)



**RECTOR AND
VICE-CHANCELLOR**
Prof FW Petersen
PhD (SU)



CHAIR OF COUNCIL
Mr W Louw
MEng (CIVIL) (SU)



**VICE-RECTOR:
RESEARCH**
Prof RC Witthuhn
PhD (UFS)



**VICE RECTOR:
OPERATIONS**
Prof P Naidoo
PhD (VISTA)



**VICE-RECTOR:
INSTITUTIONAL CHANGE,
STUDENT AFFAIRS
AND COMMUNITY
ENGAGEMENT**
Prof P LenkaBula
PhD (UNISA)



**VICE-RECTOR:
ACADEMIC**
Dr EL van Staden
DPhil (UJ)



REGISTRAR:
Mr NN Ntsababa
MPA (NMU)



**CAMPUS PRINCIPAL:
SOUTH CAMPUS**
Prof D Coetzee
PhD (UFS)



**CAMPUS PRINCIPAL:
QWAQWA**
Dr M Mandew
PhD (UN)



**PRESIDENT OF
CONVOCATION**
Prof JU Grobbelaar
DSc (UFS)



DEANS



**DEAN:
ECONOMIC AND
MANAGEMENT SCIENCES**

Prof HJ Kroukamp
DPhil (UPE)



**DEAN:
EDUCATION**

Prof LC Jita
PhD (MSU)



**DEAN:
HEALTH SCIENCES**

Prof GJ van Zyl
PhD (UFS)



**DEAN:
THE HUMANITIES**

Prof H Hudson
PhD (UFS)



**DEAN:
LAW**

Prof JC Mubangizi
LLD (UDW)



**DEAN:
NATURAL AND
AGRICULTURAL SCIENCES**

Prof PD Vermeulen
PhD (UFS)



**ACTING DEAN:
THEOLOGY AND RELIGION**

Prof RS Letšosa
PhD (PU/CHE)

HONORARY QUALIFICATION

DOCTOR OF SCIENCE DR BL FANAROFF



Dr Bernard Fanaroff began his academic career in 1965 at the University of the Witwatersrand, where he obtained a BSc and a BSc (Hons) in Theoretical Physics, and in 1974 he obtained a PhD in Radio Astronomy from the University of Cambridge. It is during this time that Fanaroff, together with a British astronomer, Julia Riley, made a breakthrough in the classification of radio galaxies and quasars by identifying two classes of radio sources which now bear their names – Fanaroff-Riley class I and class II sources, or FR-I and FR-II as they are now universally known. Dr Fanaroff's paper on the Fanaroff-Riley classification has been cited well over 2 000 times.

Dr Fanaroff's commitment to social justice saw him dedicate 19 years of his life to the struggle against apartheid – as an organiser and national secretary for the Metal Allied Workers Union, which became the National Union of Metalworkers of South Africa (NUMSA) in 1987. After the first democratic elections in 1994, Dr Fanaroff was appointed as the Deputy Director-General in the Office of President Nelson Mandela, and as Head of the Office for the Reconstruction and Development Programme (RDP). He also served as the Deputy Director-General of the Department of Safety and Security, the Chairperson of the Integrated Justice System Board and the Inter-departmental Steering Committee for Border

Control, and is a founding member of the Academy of Science of South Africa, a Fellow of the Royal Astronomical Society, and is a visiting Professor at the University of Oxford.

Following a distinguished career in public service, he was asked by the previous NRF CEO and UFS Chancellor, Dr Khotso Mokhele, and the previous Director-General of Science and Technology, Dr Rob Adam, to set up the South African SKA Project Office (SASPO) in 2013 to bring the largest radio telescope in the world to Africa. Under his visionary leadership, he succeeded in bringing one of the largest scientific endeavours in history to South Africa, winning the bid to construct the world's largest radio telescope in the Great Karoo. In addition, under his guidance two very successful pathfinder arrays were constructed in South Africa, namely KAT-7 and MeerKAT, as technology demonstrators for the future SKA project. The MeerKAT is generally acknowledged to be the leading radio telescope of its kind in the world. A key part of the project has been the development of the SKA South Africa's highly respected Human Capital Development programme.

Despite his retirement at the end of 2015, Dr Fanaroff has continued to work as an adviser to the SKA SA project, as well as an adviser to the Ministry of Science and Technology. He has been appointed co-chair of the BRICS (Brazil, Russia, India, China and South Africa) Working Group on Information and Communication Technologies and High-Performance Computing, and as member of the Advisory Committee of the Breakthrough Listen project.

Dr Fanaroff's contributions to science and society continues to be recognised on a global scale. He has been awarded honorary doctorates from six South African universities, received an award for science diplomacy from Minister Naledi Pandor, and was named Ambassador of the Year by the Cape Chamber of Business and Die Burger in 2012. In 2014, he was awarded the Order of Mapungubwe – one of the highest honours in the country – conferred by the State President, not only for his tremendous contribution to radio astronomy, but also for the pivotal role he played as an activist, trade unionist, and public servant. In 2017, Dr Fanaroff was awarded the USA's Karl G Jansky Lectureship for his unparalleled leadership in astronomy and public service. Other recipients of the Jansky Award include seven Nobel laureates – as well as noted astronomers Jocelyn Bell-Burnell and Vera Rubin. He also received the Science-for-Society Gold Medal from the Academy of Science of South Africa in 2017 and the 2018 Lifetime Achievement Award by the National Research Foundation. In 2019 he was elected a Fellow of the Royal Society of London, one of the world's most prestigious scientific academies.

The University of the Free State is honoured to confer the degree of DSc (honoris causa) on Dr Bernard Lewis Fanaroff.

CHANCELLOR'S MEDAL

THE CHANCELLOR'S MEDAL IS AWARDED TO AN INDIVIDUAL FOR OUTSTANDING SERVICE OR ACHIEVEMENT AT LOCAL, NATIONAL OR INTERNATIONAL LEVEL, OR FOR SERVICE TO THE COMMUNITY OR THE UNIVERSITY

MR JF DE VILLIERS



Jannie de Villiers started his career as an economist for the Department of Agriculture in 1985. For more than 30 years, Mr De Villiers dedicated his knowledge, capabilities, and leadership to the agricultural sector, specifically grain/ grain-industry development. Since 2011, he served as the Chief Executive Officer of Grain SA. He is viewed as a leader in the agricultural and food sectors, both nationally and in international circles. Mr De Villiers plays a leading role in policy formulation, and his opinion is valued by role players in the agri-business sector, leaders, policy makers, and other relevant stakeholders.

He is regarded as an exceptional leader in the grain sector. His influential positions can be summarised as chair, vice-chair, trustee and/or board member of numerous industries serving companies, referring to among others, chairperson of the SASOL Agricultural Trust, board member and former chairperson of the South African Grain Laboratory as well as the South African Grain Information Service.

Mr De Villiers is an exceptional team leader and is highly respected by all team members, which is evident through Grain SA's successful development and training programmes, as well as support to commercial and advanced farmers. Under his leadership, Grain SA established a comprehensive farmer development

programme that aims to develop black commercial farmers, making an invaluable contribution to food security. More than 10 000 farmers were accommodated in its initiatives. Together, these farmers cultivated close to 150 000 ha throughout South Africa and R20 million was spent annually in support of this programme. A further R100 00 million of Government and Industry Programs funding was managed to develop these farmers. He values the transformative power of training and development. Via Grain SA, training is not merely done for the sake of training, but to enrich people's lives and equip upcoming farmers with knowledge and practical skills to improve crops, plan for the future, and to establish a sustainable livelihood. As part of this enrichment strategy, De Villiers' focus on mentorship shaped the cornerstone on which Grain SA's Subsistence to Abundance project is based. (This project, in partnership with The Jobs Fund – National Treasury, Kynoch, Monsanto, SA Lime & Gypsum, Syngenta, and the Department of Rural Development and Land Reform, contributed greatly to the output deliverables and success of the project to date).

Under his guidance, the mentorship programme grew to launch 'study groups' (grouped according to location) assigned to a dedicated mentor. Each mentor meets with his/her assigned group on a weekly basis to provide theoretical training based on an introductory syllabus of maize production. The 'study groups' are not merely utilised for training purposes, but forms a platform through which farmers can express concerns, ask questions, and plan ahead, which proves critical for resource management and saving – contributing to the unbelievable results of the project to date. This is also the place where these farmers are exposed to modern input suppliers.

In partnership with Syngenta and the University of the Free State Business School, he was influential in the development of a tailored leadership development programme, offered at the Grain Academy. Mr De Villiers indicated that Grain SA supports this initiative: "The establishment of a grain academy is in line with Grain SA's strategic objectives and we are so excited to partner with Syngenta on delivering this project. The future of sustainable production lies in our competitiveness and it can only be improved with ongoing training."

Jannie de Villiers is an esteemed 'ambassador' for South African agriculture and is well-known in the international agriculture and food security circles. He frequently represents South Africa on the International Grains Council (where he acted as a keynote speaker in 2004 and 2007), contributed to the High-Level Conference on World Food Security of the Food Agriculture Organization (FAO) in June 2008, and served as Conference Chairperson for the International Association of Operative Millers for the Middle East and Africa in 2010.

This candidate's professional standing, his national and international engagements and numerous leadership positions speaks of a lifetime's dedication and loyalty towards South African and international agriculture.

The University of the Free State is honoured to award the Chancellor's Medal to Mr Johannes Francois de Villiers.

COUNCIL MEDAL

THE COUNCIL MEDAL IS AWARDED TO UFS STAFF MEMBERS FOR SIGNIFICANT SERVICE OR ACHIEVEMENT AT OR FOR THE UNIVERSITY

MS EM OOSTHUIZEN



Elzmarie Oosthuizen started her career as teacher in Mathematics and Science and was appointed as the subject head for Mathematics, Physical Science, and Biology (senior phase). Her involvement with the local Department of Education led to an appointment as the learning facilitator for Physical and General Science at the Free State Department of Education. Ms Oosthuizen was promoted to Deputy Chief Education Specialist: Learning Co-ordinator for Natural Science in January 2000, followed by a promotion to the position of Chief Education Specialist: Learning Area Specialisation General Education Training (GET) within the Free State Department of Education. She filled this position with excellence for six and a half years before taking up a position at the University of the Free State.

As the Director of the Centre for Excellence in Teaching and Learning in Natural and Agricultural Sciences, Ms Oosthuizen has proven her support, loyalty, and dedication towards the UFS students and staff since May 2009. In this capacity, she is devoted to managing and promoting the Centre for Excellence in Teaching and Learning, supporting and promoting learning, teaching, and assessment among all lecturers within the faculty, as well as co-ordinating and

supporting partnership projects related to the improvement of teaching and learning. Her relentless efforts to improve teaching and learning, not only within the faculty, but also at governmental, national, and international levels, confirms her dedication and passion to advance teaching, learning, and ultimately student performance.

Her passion for teaching and learning inspires and encourages academics to realise the impact of their efforts. Ms Oosthuizen has successfully initiated the implementation of a programme to promote learning and teaching in Mathematics, Natural Sciences, Economics, and Agricultural subjects. In addition, she is actively involved in managing the foundational programmes and bridging programmes for students who do not meet the minimum requirements for mainstream higher education. Her leadership and efforts in the foundation and bridging programmes are exceptional – the pass rate of the BSc bridging programme increased from 34% to 83%. Her dedication to student success is evident in her tireless efforts to streamline the registration and academic advising processes within the Faculty of Natural and Agricultural Sciences. Her concern for prospective and current students' future success is the driving force in her hands-on approach to registration and advising. Ms Oosthuizen's unwavering determination to establish a unit in the Dean's office to promote excellence in teaching and learning in Natural and Agricultural Sciences showcases her dedication to her field and her loyalty to the University of the Free State.

The University of the Free State is honoured to award the Council Medal to Ms Elizabeth Maria Oosthuizen.

GUEST SPEAKER

DR TA MANUEL

Former Minister: Finance and Chairman: Old Mutual Group Holdings



Dr Trevor Manuel served as Cabinet Minister from 1994 to 2014 under the first four Presidents of democratic South Africa: Mandela, Mbeki, Motlanthe, and Zuma. He was first appointed to Cabinet as Minister of Trade and Industry in May 1994, a portfolio he held for two years. In April 1996, he became Finance Minister, steering the South African economy for 13 years as one of the world's longest-serving finance ministers. During his last term in office, he served as Minister in the Presidency responsible for the National

Planning Commission, a position he held from May 2009 to May 2014. During his two decades as a Cabinet Minister, he also served as Member of Parliament, representing the African National Congress in a system of proportional representation.

His ministerial career highlights have tracked two decades of major social and economic development in the South African economy. As Minister of Trade and Industry, he led the process of reintegrating South Africa into the global economy after decades of sanctions and disinvestment. Domestically, he introduced extensive support measures for small, medium, and micro-enterprises to boost local economic development and grow business enterprise. During his lengthy tenure as Minister of Finance, he stabilised the macro-economy by returning the economy to growth, significantly transformed the fiscal system in respect of taxation and public spending, reduced South Africa's fiscal deficit and debt, and introduced an intergovernmental system to efficiently manage expenditure across the three spheres of government. He spearheaded the Financial Sector Charter, a first of its kind in the country, aimed at transforming the financial sector and providing financial services to the majority of South Africans previously excluded from the formal economy. As Chairperson of the National Planning Commission, he oversaw the drafting of the broadly accepted and first National Development Plan for the country.

During his Ministerial career, Dr Manuel assumed a number of ex officio positions in international bodies, including the United Nations Commission for Trade and Development (UNCTAD), the World Bank, the IMF, the G20, the African Development Bank, and the Southern African Development Community. He was elected by his peers as chair of a number of these bodies. He served two terms as Chairperson of the Development Committee of the World Bank.

He was also appointed to serve in various capacities in his own right. He was Special Envoy for Financing Development on two occasions

– in 2001 and 2008 – appointed by successive Secretaries General of the United Nations. He served on various international commissions, including the Task Force on Global Public Goods (2002/3), the Africa Commission (2005), the Commission on Growth and Development (2006 to 2010), the Global Ocean Commission (2012/4 – which he also co-chaired), and the Commission on the New Climate Economy (2013/4). He was requested to chair various task teams, including on IMF Governance Reform (2007/8) and the World Bank Doing Business Report (2013).

Dr Manuel has received a number of awards and recognitions, including Africa's Finance Minister of the Year and the Woodrow Wilson Public Service award. He has eight honorary doctorates from South African tertiary institutions in a range of disciplines such as Commerce, Law, Technology, and a Doctor of Laws from MacMaster University, Ontario, Canada. He has served as the Chancellor of the Cape Peninsula University of Technology (CPUT) since May 2008 until 2013.

He is an Honorary Professor in the School of Development Policy and Practice at the University of Cape Town (UCT) (since 2015) where he is a Senior Political Fellow, and as Professor Extraordinaire at the University of Johannesburg (since 2014).

Dr Manuel is Chairperson of Old Mutual Limited. He serves as Non-Executive Director on the Board of SwissRe. He is a senior adviser to and the Deputy Chairperson of Rothschild South Africa. He also serves as a trustee on the Allan Gray Orbis Endowment Trust. He serves on the Advisory Board of the Centre for African Cities at UCT.

Dr Manuel was born in 1956 and matriculated from Harold Cressy High School in Cape Town. He has a National Diploma in Civil and Structural Engineering from the Peninsula Technikon and completed the Executive Management Programme – a joint programme between Stanford University and the National University of Singapore. He is married to Dr Maria Ramos and they live in South Africa.

PLEASE NOTE

List of candidates receiving degrees, diplomas and certificates:

Degrees, diplomas, and certificates of candidates who are unable to attend the graduation ceremony will be conferred in absentia.

An * next to a name indicates that the degree, diploma or certificate is awarded with distinction.



ACTING DEAN |

PROF JM Tsoka-Gwegweni

MASTER'S DEGREES

MASTER OF HEALTH PROFESSIONS EDUCATION

DYWILI, Sidney Thamsanqa
Ishmael

Dissertation Title: *IDENTIFYING
THE TARGET GROUPS FOR
EDUCATIONAL OUTREACH TO
REDUCE*

Supervisor: Prof WJ Steinberg

Co-supervisor: Dr J
Bezuidenhout

JANSEN VAN VUUREN,
Johannes Jurie

Dissertation Title: *INTERNSHIP
FOR THE EMERGENCY
CARE PRACTITIONER (ECP)
PARAMEDIC IN SOUTH AFRICA:
A NEEDS ANALYSIS*

Supervisor: Prof MV Jansen van
Vuuren

Co-supervisor: Dr B van der
Merwe

MOSTERT, Arnelle

Dissertation Title: *QUALITY
OF LIFE AND ACADEMIC
PERFORMANCE OF
UNIVERSITY OF THE FREE
STATE FIRST-YEAR HEALTH
SCIENCES STUDENTS*

Supervisor: Dr LJ van der Merwe

Co-supervisor: Dr MP Jama

MOSTERT, Cornelia Susanna

Dissertation Title: *THE
OPINIONS OF FINAL YEAR
UNDERGRADUATE PHARMACY
STUDENTS AT THE NORTH-
WEST UNIVERSITY REGARDING
ASSESSMENT*

Supervisor: Dr C van Wyk

SCHOOL FOR ALLIED HEALTH PROFESSIONS

MASTER OF ARTS IN HUMAN MOVEMENT SCIENCE

BESTER, Carel

Dissertation Title: *PHYSICAL
DEMANDS OF ELITE RUGBY
UNION REFEREES*

Supervisor: Prof FF Coetzee

Co-supervisor: Mr M Blair

BOTHA, Christel

Dissertation Title: *THE
INCIDENCE OF MATCH PLAYING
INJURIES IN JUNIOR NETBALL
PLAYERS IN SOUTH AFRICA*

Supervisor: Prof FF Coetzee

BRINK, Tania Kristel

Dissertation Title: *PHYSICAL
DEMANDS OF ELITE RUGBY
UNION REFEREES*

Supervisor: Prof FF Coetzee

Co-supervisor: Mr M Blair

MALAN, Liné

Dissertation Title: *PHYSICAL
ACTIVITY LEVELS AND
LIFESTYLE HABITS OF FEMALE
UNDERGRADUATE STUDENTS
AT A TERTIARY INSTITUTION*

Supervisor: Prof HJ Bloemhoff

Co-supervisor: Prof FF Coetzee

WALRAVEN, Brett Robert

Dissertation Title: *PHYSICAL
ACTIVITY LEVELS AND
LIFESTYLE HABITS OF MALE
UNDERGRADUATE STUDENTS
AT A TERTIARY INSTITUTION*

Supervisor: Prof HJ Bloemhoff

Co-supervisor: Prof FF Coetzee

MASTER OF OCCUPATIONAL THERAPY

DU PREEZ, Jani*

Dissertation Title: *ENVIRONMENTAL FACTORS
ENABLING OCCUPATIONAL
WELLBEING OF ADOLESCENTS
LIVING IN GROENDAL
COMMUNITY*

Supervisor: Ms M Strauss

Co-supervisor: Ms T van der
Merwe

SERFONTEIN, Lyndall

Dissertation Title: *DISCHARGED
CVA PATIENTS WITH*



FUNCTIONAL IMPAIRMENTS AT A PRIVATE REHABILITATION UNIT IN BLOEMFONTEIN

Supervisors: Mrs M Visser and
Mrs M van Schalkwyk

MASTER OF OPTOMETRY

NONKULA, Doran Monwabisi

Dissertation Title: *PREVALENCE
OF THE DRY EYE SYNDROME
AMONG PATIENTS AT EYE
CLINIC IN NELSON MANDELA
ACADEMIC HOSPITAL*

Supervisors: Prof TA Rasengane
and Dr F Adamjee

MASTER OF SCIENCE IN DIETETICS

HAASBROEK, Carina

Dissertation Title:
*OVERWEIGHT, OBESITY AND
ASSOCIATED RISK FACTORS
IN THE SOUTH AFRICAN AIR
FORCE, BLOEMFONTEIN*

Supervisor: Ms EM Jordaan

MOLENAAR, Carla Yvonne

Dissertation Title: *KNOWLEDGE,
ATTITUDES AND PRACTICES
(KAP) OF REGISTERED
DIETITIANS IN SOUTH
AFRICA REGARDING EATING
DISORDERS*

Supervisor: Dr NML Meko

PRETORIUS, Karla

Dissertation Title:
*NUTRITION KNOWLEDGE
AND NUTRITIONAL ADVICE
PRACTICES OF NETBALL
COACHES IN THE FREE STATE*

Supervisor: Ms EM Jordaan

RUST, Annica Madeleen

Dissertation Title: *FEEDING
PRACTICES OF MOTHERS
WITH INFANTS AND CHILDREN
ATTENDING PRESCHOOLS IN A
HIGH SOCIO-ECONOMIC AREA
IN JOHANNESBURG*

Supervisor: Dr NML Meko

VAN AARDT, Reon

Dissertation Title:
*NUTRITIONAL ASSESSMENT
OF PROFESSIONAL RUGBY
PLAYERS IN MPUMALANGA:
ARE REQUIREMENTS
BEING MET ACCORDING TO
CURRENT SPORTS NUTRITION
STANDARDS?*

Supervisor: Prof CM Walsh

MASTER OF SCIENCE IN PHYSIOTHERAPY

DU TOIT, Karel Christiaan

Dissertation Title: *FUNCTIONAL
MOVEMENT SCREENING
AND INJURY PROFILING IN
PROFESSIONAL SOCCER*

Supervisor: Mrs A van der
Merwe

Co-supervisor: Dr C Brandt

SCHOOL OF CLINICAL MEDICINE

MASTER OF MEDICAL SCIENCE WITH SPECIALISATION IN MEDICAL PHYSICS

KOEN, Liebner*

Dissertation Title: *EVALUATING
A SINGLE TREATMENT
PLANNING SYSTEM BEAM
MODEL FOR MULTIPLE
BEAM-MATCHED LINEAR
ACCELERATORS*

Supervisor: Dr W Shaw

Co-supervisor: Dr FCP du
Plessis

SACHSE, Karl Nicholas*

Dissertation Title:
*DEVELOPMENT AND
VALIDATION OF AN ELECTRON
MONTE CARLO MODEL FOR
AN ELEKTA SYNERGY® LINEAR
ACCELERATOR*

Supervisor: Dr FCP du Plessis

STEYN, Joseph Martinus

Dissertation Title:
*VERIFICATION OF PROSTATE
CONFORMAL RADIOTHERAPY
PLANNING PROTOCOL ON AN
XIO TREATMENT PLANNING
SYSTEM*

Supervisor: Dr FCP du Plessis

Co-supervisor: Prof WID Rae



MASTER OF MEDICAL SCIENCE WITH SPECIALISATION IN PHARMACOLOGY

MANGOATO, Innocensia
Mokgohlwe

Dissertation Title: *THE
POTENTIAL OF **CANNABIS
SATIVA** L. AERIAL PLANT PARTS
EXTRACTS TO REVERSE DRUG
RESISTANCE IN SELECTED
RESISTANT LUNG- AND COLON
CANCER CELL LINES*

Supervisor: Prof MG Matsabisa

MOOKO, Teboho*

Dissertation Title: *EVALUATION
OF THE EFFECTS OF
CANNABIS SATIVA L. AERIAL
PLANT PARTS EXTRACTS
ON CHOLINESTERASE AND
SECRETASE ENZYME ACTIVITY
IN VITRO*

Supervisor: Prof MG Matsabisa

MASTER OF MEDICINE IN ANAESTHESIOLOGY

COETZEE, Jan Andries
SWANEPOEL, Michelle
VORSTER, Johannes Gysbertus

MASTER OF MEDICINE IN FAMILY MEDICINE

ISHAYA, Nyitiba

MASTER OF MEDICINE IN INTERNAL MEDICINE

GRIESEL, Andre
SILANDA, Mandla
STEYN, Caroline Gina

MASTER OF MEDICINE IN OPHTHALMOLOGY

BOTHA, Theunis Christoffel
YAKO, Anele

MASTER OF MEDICINE IN ORTHOPAEDIC SURGERY

CONRADIE, Gerhard Petrus*
VAN STADEN, Gideon Francois

MASTER OF MEDICINE IN OTORHINOLARYNGOLOGY

ROOS, Marileen

MASTER OF MEDICINE IN PAEDIATRIC SURGERY

MOTLOUNG, Elliot

MASTER OF MEDICINE IN PAEDIATRICS

BUGA, Munduru Barbara
LAZARUS, Alicia

MASTER OF MEDICINE IN PLASTIC SURGERY

SMALL, Lizanne

MASTER OF MEDICINE IN PSYCHIATRY

LOTTERING, Jacobus Steyn
PIETERSE, Frida Isabella

MASTER OF MEDICINE IN SURGERY

AIKMAN, Johan George
MALINDI, Teboho Jafta

SCHOOL OF NURSING

MASTER OF SOCIAL SCIENCE IN NURSING

DE KLERK, Daleen

Dissertation Title: *MATERNAL
KNOWLEDGE, ATTITUDE AND
PRACTICES WITH REGARDS TO
POSTNATAL CARE SERVICES
IN A FREE STATE RURAL
HOSPITAL*

Supervisor: Prof A Joubert

MATUKA, Joseph

Dissertation Title: *KNOWLEDGE,
ATTITUDES AND PRACTICES
OF NURSES TOWARDS
ASSESSMENT USING
PERFORMANCE REPORTS IN A
FREE STATE SUB-DISTRICT*

Supervisor: Dr M Reid

Co-supervisor: Dr D Botha



POSHOLI, Mamonaheng
Pascalina

Dissertation Title: *STRATEGIES
REGISTERED NURSES USE
TO IMPLEMENT INTEGRATED
PRIMARY HEALTH CARE IN
MASERU DISTRICT, LESOTHO*

Supervisor: Dr MC Wilke

SHAABE, Mannini

Dissertation Title: *COMPLIANCE
TO HYPERTENSION
TREATMENT BY PATIENTS
ATTENDING PRIMARY
HEALTH CARE SERVICES
ON MAFETENG DISTRICT,
LESOTHO*

Supervisor: Dr L van Rhyn

Co-supervisor: Mrs AM Welman

VAN DER WALT, Lezelle Ruanda

Dissertation Title: *MOBILE
HEALTH DEVICES USED TO
SUPPORT A COMPLIANT
LIFESTYLE IN PATIENTS
WITH CHRONIC DISEASES: A
SYSTEMATIC REVIEW*

Supervisor: Dr L van Rhyn

Co-supervisor: Mrs AM Welman

SCHOOL OF PATHOLOGY

**MASTER OF MEDICAL SCIENCE
WITH SPECIALISATION IN
VIROLOGY**

BONNET, Elisabeth Hendrika

Dissertation Title: *THE
DEVELOPMENT AND
AMPLIFICATION OF A
REVERSE TRANSCRIPTION
RECOMBINASE POLYMERASE
AMPLIFICATION ASSAY FOR
DETECTION OF FLAVIVIRUSES*

Supervisor: Prof FJ Burt

KENNEDY, Nicole

Dissertation Title:
*DEVELOPMENT OF IN-HOUSE
ASSAYS FOR DETECTION OF
SINDBIS VIRUS INFECTIONS*

Supervisor: Prof FJ Burt

TERBLANCHE, Gert Ignatius Du
Preez

Dissertation Title:
*IDENTIFICATION OF
ARBOVIRUSES CIRCULATING
IN MOSQUITO POPULATIONS
IN THE BLOEMFONTEIN AREA,
SOUTH AFRICA*

Supervisor: Prof FJ Burt

Co-supervisor: Mr A Kemp

**MASTER OF MEDICINE IN
MEDICAL MICROBIOLOGY**

MNQOKOYI, Loyiso Sibusiso

DEAN'S MEDAL

**AWARDED TO A STUDENT WHO ACHIEVED THE BEST RESULTS IN RESPECT OF A MASTER'S DEGREE
IN THE FACULTY OF HEALTH SCIENCES DURING THE YEAR 2018**

Teboho Mooko

Master of Medical Science with Specialisation in Pharmacology



DEAN |

PROF PD VERMEULEN

MASTER'S DEGREES

AGRICULTURAL SCIENCES

MASTER OF AGRICULTURE MAJORING IN AGRICULTURAL ECONOMICS

MATLOU, Ringetani Clementine

Dissertation Title: *RESILIENCE
OF HOUSEHOLDS TO
AGRICULTURAL DROUGHT IN
THE NORTHERN CAPE, SOUTH
AFRICA*

Supervisor: Dr YT Bahta

TSHIBALO, Takalani*

Dissertation Title: *ASSESSING
THE WATER FOOTPRINT OF
COTTON PRODUCTION IN
SOUTH AFRICA*

Supervisor: Dr H Jordaan

Co-supervisor: Dr FA Maré

MASTER OF AGRICULTURE MAJORING IN AGRICULTURAL MANAGEMENT

DE WET, Pieter-Steyn

Dissertation Title: *A FINANCIAL
MODEL TO EVALUATE RFID
TECHNOLOGY IN SHEEP
FEEDLOTS*

Supervisor: Dr WA Lombard

MASTER OF SCIENCE IN AGRICULTURE MAJORING IN ANIMAL SCIENCE

PYOOS, Georgette Maree

Dissertation Title: *THE EFFECT
OF CROSSBREEDING ON COW
EFFICIENCY AND COMPONENT
TRAITS*

Supervisor: Prof FWC Nesor

MASTER OF SCIENCE IN AGRICULTURE MAJORING IN FOOD SCIENCE

CALITZ, Annè*

Dissertation Title: *ACCELERATION OF YOGHURT
FERMENTATION WITH THE AID
OF COMMERCIAL PROTEASES*

Supervisors: Dr J Myburgh and
Dr G Kemp

MYBURGH, Rita

Dissertation Title: *VERIFICATION OF THE
SOUTH AFRICAN PORK
CLASSIFICATION SYSTEM*

Supervisors: Prof A Hugo and
Prof PE Strydom

Co-supervisor: Dr M Hope-Jones

OLCKERS, Schae-Lee*

Dissertation Title: *STARCH AND
PROTEIN CHARACTERISTICS
OF QUALITY PROTEIN MAIZE
GROWN UNDER OPTIMAL AND
LOW NITROGEN CONDITIONS*

Supervisor: Prof G Osthoff and
Prof MT Labuschagne

Co-supervisor: Prof PKW Ng

RASEBOTSA, Nare Daphney

Dissertation Title: *THE EFFECT
OF HIND QUARTER MASS AND
DIFFERENT AGEING METHODS
ON THE MEAT QUALITY
PARAMETERS OF TWO BEEF
MUSCLES*

Supervisor: Prof A Hugo and Dr
PH Heinze

RAUTENBACH, Anmeri*

Dissertation Title: *THE EFFECT
OF DIFFERENT SODIUM
REDUCTION STRATEGIES ON
THE CHEMICAL, MICROBIAL
AND SENSORY QUALITY OF A
TRADITIONAL SOUTH AFRICAN
SAUSAGE*

Supervisor: Prof A Hugo

Co-supervisor: Prof CJ Hugo



MASTER OF SCIENCE IN AGRICULTURE MAJORING IN PLANT BREEDING

MARX, Roeléne Christina

Dissertation Title: *GENETIC
DIVERSITY OF **CLEOME**
SPECIES IN SOUTHERN AFRICA*

Supervisor: Dr A van Biljon

Co-supervisor: Dr R van der
Merwe

MISHASHA, Tondani*

Dissertation Title: *FAMILY
EVALUATION FOR QUALITY
TRAITS IN SUGARCANE*

Supervisor: Prof MM Zhou

Co-supervisor: Dr R van der
Merwe

MPHELA, Whelma Mohweledi*

Dissertation Title:
*DEVELOPMENT OF FUSARIUM
WILT RESISTANT LINES IN
SOUTH AFRICAN SWEET
POTATO [**IPOMOEA BATATAS**
(L.) LAM.]*

Supervisor: Dr A Minnaar-Ontong

Co-supervisors: Dr S Laurie and
Dr W Legesse

MASTER OF SCIENCE IN AGRICULTURE MAJORING IN SOIL SCIENCE

MOTEMA, Tlhokomelo

Dissertation Title: *RESPONSE
OF SOIL CARBON FRACTIONS
AFTER 37 YEARS OF WHEAT
PRODUCTION MANAGEMENT
PRACTICES IN A SEMI-ARID
CLIMATE*

Supervisor: Dr E Kotzé

Co-supervisor: Prof CC du Preez

NCOYI, Khanyisile

Dissertation Title: *COMPARISON
OF SOIL PHOSPHORUS
FRACTIONS AFTER 37 YEARS
OF WHEAT PRODUCTION
MANAGEMENT PRACTICES IN A
SEMI-ARID CLIMATE*

Supervisor: Prof CC du Preez

Co-supervisor: Dr E Kotzé

SEEPAMORE, Masilabela Klaas*

Dissertation Title: *IMPACT OF
LONG-TERM PRODUCTION
MANAGEMENT PRACTICES ON
WHEAT GRAIN YIELD UNDER A
SEMI-ARID CLIMATE*

Supervisor: Prof CC du Preez

Co-supervisor: Dr GM Ceronio

MASTER OF SUSTAINABLE AGRICULTURE

BENGEZA, Zingesele

BHEBHE, Qhelile Ntombikayise

BUTHELEZI, Bancedile
Emmerencia

CEBEKHULU, Fisokuhle
Agreement

CHIMWAZA, Tawanda Wonder

CHIPA, Maboloka Jonas

CHONCO, Lungile Angel

COETZEE, Gideon De Villiers*

COLVELLE, Abednigo Xolani

DARRIES, Gavilin Shulamin

DE WAAL, William Frank*

DLAMINI, Themba Justice

DUBE, Ndabazinhle

FAKUDZE, Phindile Patricia*

GEBASHE, Lawrence Njabulo

GIDA, Qhamukile Constance

GROBLER, Philippus Erasmus

GUMEDE, Nondumiso
Immaculate*

HEITA, Hleni Twiitleni
Ndeshipanda

HURTER, Jacobus Petrus*

JANSE VAN RENSBURG,
Nicolaas Louis*

KAMBONDE, Lisbeth Sindano
Nyanyukweni

KHARUXAB, Reinold Reynie

KOEN, Johannes Jacobus

KOTZÉ, Gert Johannes



KUMALO, Patience Sabeliwe
KUNENE, Siyethemba
Zaphezinhle
LEKUBU, Kabisi Kenneth
LEMBETHE, Thembeke Sindiswa
LILUNGWE, Angela Chizabulyo
MABASO, Nompumelelo Angel
MABULANA, Pabalelo Lydia
MAFUKWANA, Simphiwe Caswell
MAGWABA, Shonisani
MAGWAZA, Sibongile Jabulisile
MAHLAKO, Sankatane Richard
MAHLANGU, Maritz Maisela
MAHLATHINI, Noludwe Modelina
MAKGOBA, Mankwana Christina
MAKUMBELA, Shirilela Joseph
MALEVU, Jeffrey Mphenduleni
MASHININI, Ignatious December
Mmeli
MASUKU, Elina Phumzle
MBENYA, Sinazo
MBHELE, Fikile Princess
MDUNGE, Thelma Siphindile
MGWENYENI, Sixolisiwe
MHLONGO, Phumlani
MKHWANAZI, Lindokuhle Vukani
MOHLEHLI, Mohlehl George
MOKONE, Thabitha Nthethele
MOROASWI, Letsutla Simon
MTHABELA, Sifiso Johannes
MTSHALI, Clarence Nomusa
MUKWEVHO, Mashudu Bethrice

NDWANDWE, Zanele Sweetness
NENE, Philile Vinoria
NGEMA, Patience Nomalungelo
NGOBENI, Solani Terrence
NKWANYANA, Nomfundo
Nonhlanhla
NTSHANGASE, Nonkanyiso Love
Joy
RATHETE, Dikeledi Jane
SHABALALA, Thembeke
Prudence
SHEPPARD, Errol Jean
SHEZI, Thembeke
SHINANA, Joolokeni
SHOZI, Nomvula Phindile
Nomvula
SHOZI, Zandile Margaret
SIFICI, Nkosinathi Emmanuel
SILWANA, Anathi Siphesihle
THOMAS, Alicia
TITIMANI, Maxwell Manene
VAN DEN BERG, Adriaan
VAN ROOYEN, Anne-Marie
VILAKAZI, Sibonile Teresa
WILLIAMS, Franco Jacobus
XULU, Sibongile Senamile Petunia
ZONDI, Nokubonga Happy

BUILDING SCIENCES

MASTER OF ARCHITECTURE

BADENHORST, Maroné
BESTER, Petrus Jacobus

BEYERS, Madeli*
BOTHMA, Anne-Marie
CLOETE, Louis-Martin
CONNELLAN, Chloe Victoria*
DA RESSURREICAO, Emmanuel
DE WET, Henrina Johanna*

EMMETT, Patricia Marjorie

Dissertation Title: *IBO ISLAND.
USING THE HISTORIC URBAN
LANDSCAPES APPROACH
TO DEFINE LIMITS OF
ACCEPTABLE CHANGE*

Supervisor: Prof WH Peters

Co-supervisor: Prof J Noble

JACOBS, Servirou
KLEMP, Caitlin Louise
KLINKER, Veronica
KRÖS, Joné
LAMPRECHT, Kris
LE ROUX, Phoebe*
LOMBARD, Eugenie
MABE, Phadi Mcdarlington
Elsworth*
MATCHETT, Bronwyn
MEYER, René
MOCKÉ, Kéan
PELLISSIER, Samuel Henri*
POSTHUMUS, Henco Wessel
RABE, Gisela



ROOS, Colleen
SAHD, Janine Helen
SMIT, Jacques Butler
TRUTER, Dánika
VAN AARDE, Megan
VAN JAARSVELD, Louis Jacobus
VAN LEUSDEN, Sander Lennard*
VAN STADEN, Carmen Elizabeth*
VAN ZYL, Marlé
VENTER, Arno Francois
VENTER, Johanna Aletta
VON DER FECHT, Jason

WOLVAARDT, Anneke

Dissertation Title: *INTEGRATING
LANDSCAPE WITH
ARCHITECTURE: TOWARDS AN
ENDEMIC WAY OF BUILDING
IN THE SEMI-ARID TO ARID
CENTRAL SOUTH AFRICA*

Supervisor: Prof WH Peters

**MASTER OF ARCHITECTURE
WITH SPECIALISATION IN
DESIGN**

JACOBSON, Jonathan Israel*

Dissertation Title: *HA! KERPOW!
WHAT? NO! OK, MAYBE...:
IMPROVISATION IN THE
COLLABORATIVE ARCHITECT-
CLIENT RELATIONSHIP*

Supervisor: Dr JA Noble

**MASTER OF LAND AND
PROPERTY DEVELOPMENT
MANAGEMENT IN HOUSING**

MUKUMBA, Charles Poleni

Dissertation Title: *ENABLEMENT
APPROACHES TO THE
UPGRADING OF INFORMAL
SETTLEMENTS: A CASE STUDY
OF MISISI COMPOUND IN
LUSAKA, ZAMBIA*

Supervisor: Mr T Stewart

**MASTER OF LAND AND
PROPERTY DEVELOPMENT
MANAGEMENT MAJORING IN
PROJECT MANAGEMENT**

BLIGNAUT, Adam Jacobus

**MASTER OF LAND AND
PROPERTY DEVELOPMENT
MANAGEMENT MAJORING IN
VALUATION**

QWASHU, Phumeza

TSHWANE, Kgodisho Ramaabele

**MASTER OF URBAN AND
REGIONAL PLANNING**

BOUCHER, Adele

DU PREEZ, Carmen Wiltrud

GAZIDE, Reason Rodney

HEN-BOISEN, Wayne Edwin

KHABE, Refilwe Nozipho Portia
MBONGWA, Wiseman Dumisani
MOKONYAMA, Lesetja Peter

**MOTLOGELOA, Tsholofelo
Rodney**

Dissertation Title: *FLOOD
DISASTER AND URBAN
INFORMAL SETTLEMENT
RESILIENCE IN GRASSLAND
PHASE 4, KHAYELITSHA,
MANGAUNG METROPOLITAN
MUNICIPALITY*

Supervisor: Mr T Stewart

Co-supervisor: Dr TN
Mphambukeli

**SHAPUMBA-NYALUGWE,
Johanna Amalia**

TSHAZI, Qhamani Neza

NATURAL SCIENCES

**MASTER OF DISASTER
MANAGEMENT**

DU TOIT, Gerda

HAGAN, Aniebo Benita

KELLY, Mbulelo Richard

**KODISANG, Makgosi Luisa
Jacqueline**

LORIMER, Katherine Louise

MOSESE, Victor Lesole

MOTHWA, Tebogo Lesetja



MUKOMONDERA, Tongai Regis
NDOVELA, Jamila Joyce
NTULI, Thabisile Thobeka
PUGENI, Vurayayi
SETEBE, Moeketsi Ishmael
TUKUTA, Patricia
VETSHEZA, Tobani Friend
VILJOEN, Oscar Charles

MASTER OF ENVIRONMENTAL MANAGEMENT

BONOKWANE, Philadelphia Lesedi
ENDJAMBI, Kristine Walungama
GAMBU, Thokekile Charitney
HAIHAMBO, Reginadia Otilie Panduleni Magde
HAUSIKU, Loide Naituwe Nandigolo
MAKHADI, Rinae
MALATJI, Mmatlala Emmah
MAQWAZIMA, Zandile
MATODZI, Tangedzani Karen
MOTABOTABO, Mamasheane Agnes
MUDAU, Rudzani
NEMURANGONI, Tshamaano
NKETU, Mokutu Jeremiah
PILLAY, Yoganathan
ZONDI, Nkululeko Ephraim

MASTER OF MINERAL RESOURCE MANAGEMENT

HLONGWANE, Wandisa Samkelisiwe

KOMAPE, Boitumelo Petunia
NKOMO, Sphamandla Lungisani Blessing
SCHOLTZ, Joachim Hermanus
STEYN, George Lyon

MASTER OF SCIENCE IN HOME ECONOMICS

DENNER, Carien

Dissertation Title: *RECYCLING OPPORTUNITIES AND PITFALLS OF EATERIES AND BARS IN CENTRAL SOUTH AFRICA*

Supervisor: Dr JF Vermaas

MASTER OF SCIENCE IN NANOSCIENCE

MAKOLE, Rethabile
MPHUTHI, Lehlohonolo Ernest

MASTER OF SCIENCE MAJORING IN ACTUARIAL SCIENCE

MAZIBUKO, Paulosi

Dissertation Title: *STATISTICAL MODELLING FOR HOME LOANS AND REGULATORY CREDIT RISK CAPITAL FORECAST*

Supervisor: Prof M Finkelstein

MASTER OF SCIENCE MAJORING IN AGRICULTURAL ECONOMICS

FERREIRA, André

Dissertation Title: *THE EFFECT OF FIBER DIAMETER AND STAPLE STRENGTH ON THE PRICE DETERMINATION OF DOHNE MERINO WEE IN SOUTH AFRICA*

Supervisor: Dr WA Lombard

Co-supervisor: Dr AC Geyer

MASTER OF SCIENCE MAJORING IN ASTROPHYSICS

MARAIS, Johannes Petrus*

Dissertation Title: *SEARCHING FOR NEW VERY HIGH ENERGY EMITTING AGN AMONG THE UNCLASSIFIED AND UNASSOCIATED FERMI-LAT SOURCES*

Supervisor: Dr B van Soelen

MASTER OF SCIENCE MAJORING IN BIOCHEMISTRY

OBERHOLSTER, Larise

Dissertation Title: *EVALUATION OF RECOMBINANT NEWCASTLE DISEASE*



*VIRUSES (NDV) AS CANDIDATE
VACCINE DELIVERY VECTORS
FOR ROTAVIRUS VP7 AND NSP4*

Supervisor: Prof HG O'Neill

Co-supervisor: Prof AC Potgieter

JAWALLAPERSAND, Poojah

Dissertation Title: *STUDYING
THE REGULATION OF IMMUNE
SIGNALLING MOLECULES
RELATED TO IMMUNITY
DURING AVIBACTERIUM
PARAGALLINARUM INFECTION*

Supervisor: Dr CE Boucher

Co-supervisors: Dr WJ Janse
van Rensburg and Dr WA van der
Westhuizen

LEKENA, Nkhasi

Dissertation Title:
*RECOMBINANT PRODUCTION
OF EQUINE CHORIONIC
GONADOTROPIN*

Supervisor: Dr FH O'Neill

Co-supervisors: Prof HG O'Neill
and Prof DJ Opperman

VORSTER, Amanda*

Dissertation Title: *ALTERNATIVE
BIOSYNTHESIS OF
2-PHENYLETHANOL VIA A
MULTI-ENZYME CASCADE*

Supervisor: Prof DJ Opperman

Co-supervisor: Prof MS Smit

MASTER OF SCIENCE MAJORING IN BOTANY

LABUSCHAGNE, Rinette

Dissertation Title:
*MICROSATELLITE ANALYSIS
OF THE PUCCINIA TRITICINA
POPULATION IN SOUTH AFRICA*

Supervisor: Prof B Visser

Co-supervisor: Dr E Venter

MTHOMBENI, Thulani Fanifani

Dissertation Title: *VEGETATION
CLASSIFICATION OF THE
WITSAND NATURE RESERVE,
NORTHERN CAPE, SOUTH
AFRICA*

Supervisor: Prof PJ du Preez

Co-supervisor: Dr AC van Aardt

MASTER OF SCIENCE MAJORING IN CHEMISTRY

KAPP, Lucy Ellen

Dissertation Title: *FIGHTING
CANCER WITH METALS:
MAIN FOCUS ON RHENIUM (I)
COMPLEXES*

Supervisor: Dr M Schutte-Smith

Co-supervisor: Prof HG Visser

KHASEMENE, Mahlomola Thabo
Wrenford

Dissertation Title: *MIDDLE
AND LATE TRANSITION METAL
COMPLEXES AS MODEL WATER
REDUCTION CATALYSTS*

Supervisor: Prof A Roodt

MOLAHLOE, Tsebo Sentle*

Dissertation Title:
*PHYTOCHEMICAL AND
BIOACTIVITY INVESTIGATIONS
ON APTOSIMUM ELONGATUM
ENGL. EXTRACTS*

Supervisor: Dr SL Bonnet

Co-supervisor: Dr A Wilhelm

MONA, Lijo Pius

Dissertation Title: *ELEMENTAL
ASSESSMENT AND
EXTRACTION OF THE WASTE
ROCK TAILING FROM A FREE
STATE GOLD MINE*

Supervisor: Dr RF Shago

Co-supervisors: Prof W Purcell
and Dr M Nete

MORERWA, Zanele Gift

Dissertation Title:
*ENVIRONMENTALLY FRIENDLY
RHODIUM (I) MODEL CATALYST*

Supervisor: Prof A Roodt

Co-supervisor: Dr GJS Venter



MOTENTE, Mokete Albert

Dissertation Title: *MIDDLE AND LATE TRANSITION METAL COMPLEXES AS MODEL WATER REDUCTION CATALYSTS*

Supervisor: Prof A Roodt

REDGARD, Shaun*

Dissertation Title: *NUCLEOPHILE ASSISTED CARBON DIOXIDE FIXATION FOR A CLEANER ENVIRONMENT*

Supervisor: Prof A Roodt

**MASTER OF SCIENCE
MAJORING IN CONSUMER
SCIENCE**

DU PLESSIS, Stephani*

Dissertation Title: *EVALUATION OF LAMB AND MUTTON QUALITY AT RETAIL LEVEL IN THE TSHWANE METROPOLE*

Supervisors: Prof A Hugo and Dr M Hope-Jones

Co-supervisor: Prof PE Strydom

HISCOCK, Lucil*

Dissertation Title: *SENSORY PROFILING OF AND CONSUMER*

*BEHAVIOUR TOWARDS
AMARANTHUS GENOTYPES IN
SOUTH AFRICA*

Supervisor: Dr C Bothma

Co-supervisors: Dr A van Biljon
and Prof A Hugo

**MASTER OF SCIENCE
MAJORING IN ENTOMOLOGY**

MOETI, Abel Thabo

Dissertation Title: *DESCRIPTION OF THE LIFE STAGES OF FORENSICALLY IMPORTANT COLEOPTERA IN THE CENTRAL FREE STATE*

Supervisor: Dr SL Brink

Co-supervisor: Prof L Basson

MOTOLO, Tshepiso Christinah*

Dissertation Title: *THE CASCADING TROPHIC ACCUMULATION OF ALDICARB IN A CARRION ECOSYSTEM: THE FORENSIC IMPLICATIONS*

Supervisor: Dr SL Brink

**MASTER OF SCIENCE
MAJORING IN
ENVIRONMENTAL
MANAGEMENT**

MALINDIE, Sinalo Nkqubela*

Dissertation Title: *POPULATION- AND COMMUNITY LEVEL SHIFTS IN STABLE*

*ISOTOPE NICHE BREADTHS
OF HERBIVORE POPULATIONS
IN THE SOUTH AFRICAN
GRASSLAND BIOME*

Supervisor: Dr D Codron

Co-supervisor: Dr F Buschke

**MASTER OF SCIENCE
MAJORING IN FOOD SCIENCE**

DUBE, Sanele

Dissertation Title: *AGE GELATION WITHIN UHT MILK*

Supervisor: Dr K Myburgh

KOBENI, Sibusiso

Dissertation Title: *THE DYNAMIC CHANGES OF AFRICAN ELEPHANT MILK COMPOSITION OVER LACTATION*

Supervisor: Prof G Osthoff and Dr M Madende

NOGUDA, Thembakazi

Dissertation Title: *ISOLATION AND CHARACTERIZATION OF LYTIC BACTERIOPHAGES AS A POTENTIAL ALTERNATIVE FOR BOVINE MASTITIS CONTROL*

Supervisor: Prof BC Viljoen

Co-supervisor: Prof RR Bragg



MASTER OF SCIENCE MAJORING IN GENETICS

SUSMAK, Chantay

Dissertation Title: *BIPOLAR DISORDER: GENETIC ANALYSIS OF CIRCADIAN RHYTHM ASSOCIATED GENES AND METABOLIC SYNDROME*

Supervisor: Mrs SR Schneider

Co-supervisor: Mrs Z Murray

VAN NIEKERK, Marika Edna

Dissertation Title: *GENETIC DIVERSITY IN FRAGMENTED SOUTHERN AFRICAN GIRAFFE POPULATIONS*

Supervisor: Prof JP Grobler

Co-supervisor: Dr F Deacon

MASTER OF SCIENCE MAJORING IN GEOGRAPHY

MASHIMBYE, Nhlamulo Curtis

Dissertation Title: *A SPATIAL DROUGHT HAZARD AND RISK ASSESSMENT OF THE EASTERN CAPE PROVINCE, SOUTH AFRICA*

Supervisor: Dr CH Barker

MHLOMI, Tumelo Ian

Dissertation Title: *THE ROLE OF THE NATIONAL WATER ACT ON ADAPTIVE CAPACITY OF COMMERCIAL FARMERS – INVESTIGATING CLIMATE IN THE FEZILE DABI DISTRICT MUNICIPALITY IN THE FREE STATE PROVINCE*

Supervisor: AJ van der Merwe

MASTER OF SCIENCE MAJORING IN GEOHYDROLOGY

GOMO, Benard Tembo

Dissertation Title: *INVESTIGATION OF HYDROGEOCHEMICAL PROCESSES AND GROUNDWATER QUALITY IN KAKONTWE AQUIFERS IN NDOLA, ZAMBIA*

Supervisor: Dr M Gomo

GOVENDER, Nishen

Dissertation Title: *CHARACTERISATION OF THE DEEP AQUIFERS OF SOUTH AFRICA - THE BUSHVELD IGNEOUS COMPLEX, CRYSTALLINE BASEMENT ROCKS AND DOLOMITE FORMATIONS*

Supervisor: Dr F Fourie

JANSEN VAN VUUREN, Jacobus Lukas

Dissertation Title: *GEOHYDROLOGICAL INVESTIGATION TO AUGMENT RURAL WATER SUPPLY IN THE THABA NCHU AREA IN THE FREE STATE PROVINCE*

Supervisor: Mr F de Lange

LOMBARD, Jan-Michael

Dissertation Title: *THE USE OF MINE WATER BALANCES TO OPTIMISE WATER MANAGEMENT IN OPENCAST AND UNDERGROUND COLLIERIES IN THE WITBANK COALFIELDS OF SOUTH AFRICA*

Supervisor: Mr E Lukas

MAGINGI, Awodwa*

Dissertation Title: *MODELLING A CONVERSION OF A REFINED TO AN UNCONFINED AQUIFER FLOW*

Supervisor: Prof A Atangana

MAZIBUKO, Jemias Clifford*

Dissertation Title: *ESTIMATING HYDRAULIC CONDUCTIVITIES*



*THROUGH THE MEASUREMENT
OF STREAMING POTENTIALS*

Supervisor: Dr F Fourie

MUTANDANYI, Tshanduko*

Dissertation Title: *MODELLING
SUBSURFACE WATER FLOW IN
THE UNSATURATED ZONE*

Supervisor: Prof A Atangana

MYEKO, Palesa*

Dissertation Title: *MODELLING
CONVECTIVE-DIFFUSIVE OF
CHEMICALS CARRIED BY
GROUNDWATER*

Supervisor: Prof A Atangana

OJO, Olumayowa Olaposi

Dissertation Title:
*HYDROGEOLOGICAL
CHARACTERISATIONS OF
SELECTED AQUIFER SYSTEMS
IN ABEOKUTA, SOUTH-
WESTERN NIGERIA*

Supervisor: Mr F de Lange

PEEK, Charles Michael*

Dissertation Title:
GEOHYDROLOGICAL

*CHARACTERISATION OF THE
COLENSO FAULT SYSTEM
NEAR KLAPMUTS*

Supervisor: Dr F Fourie

RAMAKATSA, Dineo Gifts*

Dissertation Title:
*DETERMINISTIC AND
STOCHASTIC ANALYSIS
OF GROUNDWATER IN
UNCONFINED AQUIFER MODEL*

Supervisor: Prof A Atangana

RAMASALA, Rofhiwa Joyce

Dissertation Title:
*ASSESSMENT OF LABORATORY
LEACH TEST METHODS
FOR THE EVALUATION OF
ENVIRONMENTAL IMPACT BY
COAST AND GOLD MINE WASTE*

Supervisor: Dr LM Deyssel

Co-supervisor: Dr M Gomo

SEKIBA, Fhatuwani Matome
Adolph

Dissertation Title: *APPLICATION
OF GEOPHYSICAL
TECHNIQUES IN THE
DELINEATION OF AQUIFER
SYSTEMS IN THE BEAUFORT
WEST AREA, WESTERN
KAROO, SOUTH AFRICA*

Supervisor: Dr F Fourie

STEYN, Alberta Johanna*

Dissertation Title:
*GEOCHEMICAL INVESTIGATION
OF THE UNION COLLIERY
UNDERGROUND MINE
WORKINGS, MPUMALANGA,
SOUTH AFRICA*

Supervisor: Dr R Hansen

Co-supervisor: Mr E Lukas

**MASTER OF SCIENCE
MAJORING IN GEOLOGY**

NAUDÉ, Louis Vivian

Dissertation Title:
*GEOCHEMICAL MODEL OF
ADSORPTION OF URANIUM
ON MINE SOIL IMPACTED
BY WITWATERSRAND GOLD
TAILINGS FACILITIES*

Supervisor: Dr RN Hansen

**MASTER OF SCIENCE
MAJORING IN MICROBIOLOGY**

BISSCHOFF, Eduvan

Dissertation Title: *THE
DEVELOPMENT OF A WIDE
RANGE YEAST CRISPR-CAS9
GENE EDITING SYSTEM*

Supervisor: Prof J Albertyn

Co-supervisor: Prof CH Pohl-
Albertyn



COETZEE, Janetta Magrieta

Dissertation Title: *ANTIBODY FRAGMENTS AS A POSSIBLE THERAPEUTIC TREATMENT FOR **INFECTIOUS BRONCHITIS VIRUS** IN POULTRY*

Supervisor: Prof RR Bragg

Co-supervisor: Dr CE Boucher

DU PLOOY, Lukas Marthinus*

Dissertation Title: *THE DEVELOPMENT OF A CRISPR-CAS9 GENE EDITING SYSTEM FOR CRYPTOCCOCUS DENEFORMANS*

Supervisor: Prof J Albertyn

Co-supervisor: Prof CH Pohl-Albertyn

HELLMUTH, Julius Eduard

Dissertation Title: *COMPARATIVE GENOME ANALYSIS OF AVIBACTERIUM PARAGALLINARUM SEROGROUPS A, B AND C*

Supervisor: Dr CE Boucher

Co-supervisor: Dr ED Cason

MOGOTSI, Milton Tshidiso*

Dissertation Title: *GENOMIC INVESTIGATION OF THE FAECAL RNA VIROME IN*

CHILDREN FROM OUKASIE CLINIC, NORTH WEST PROVINCE, SOUTH AFRICA

Supervisor: Dr MM Nyaga

Co-supervisor: Prof HG O'Neill

OOSTHUIZEN, Lize*

Dissertation Title: *TAXONOMY AND GROWTH CHARACTERISTICS OF A NOVEL **CHRYSEOBACTERIUM SPECIES***

Supervisor: Prof CJ Hugo

PIETERSE, Bianca

Dissertation Title: *STUDY OF HST6 FUNCTION IN CANDIDA ALBICANS THROUGH THE APPLICATION OF A CRISPR-CAS9 GENE EDITING SYSTEM*

Supervisor: Prof J Albertyn

Co-supervisor: Prof CH Pohl-Albertyn

SANDER, Willem Jacobus*

Dissertation Title: *INVESTIGATION INTO THE EFFECT OF FATTY ACIDS ON THE YIELD AND REPLICATION OF ROTAVIRUS IN CELL CULTURE*

Supervisor: Prof HG O'Neill

Co-supervisor: Prof CH Pohl-Albertyn

VAN DER BERG, Christina Maria

Dissertation Title: *INDUSTRIAL AND MEDICINAL APPLICATION OF REISHI AND LION'S MANE MUSHROOMS*

Supervisor: Prof BC Viljoen

Co-supervisor: Prof A Hugo

VAN NIEKERK, Jeanette

Dissertation Title: *DETECTION OF POTENTIAL ANTIVIRAL PEPTIDE FRAGMENTS AGAINST NEWCASTLE DISEASE VIRUS*

Supervisor: Prof RR Bragg

Co-supervisors: Dr EC Boucher and Dr WA van der Westhuizen

**MASTER OF SCIENCE
MAJORING IN MINERAL
RESOURCE MANAGEMENT**

DIERGAARDT, Wony Christa

**MASTER OF SCIENCE
MAJORING IN PHYSICS**

**ABDELREHMAN, Mogahid
Hassan Mohammed***

Dissertation Title: *SYNTHESIS*



AND CHARACTERIZATION OF BISMUTH DOPED STRONTIUM OXIDE POWDER AND THIN FILMS

Supervisor: Prof HC Swart

Co-supervisors: Prof RE Kroon and Prof A Yousif

JABRALDAR, Babiker
Mohammed Jaffar*

Dissertation Title:
LUMINESCENCE STUDIES AND STABILITY OF BISMUTH DOPED LANTHANUM OXIDE AND OXYSULPHIDE

Supervisor: Prof KE Kroon

Co-supervisor: Prof HC Swart and Prof HAA Seed Ahmed

**MASTER OF SCIENCE
MAJORING IN PHYSICS**

LEE, Edward*

Dissertation Title: *SYNTHESIS AND LUMINESCENCE PROPERTIES OF Bi³⁺, Yb³⁺ CO-DOPED Y₂O₃ PHOSPHOR POWDER AND THIN FILM FOR APPLICATION IN SOLAR CELLS*

Supervisor: Prof HC Swart

Co-supervisor: Prof JJ Terblans

**MASTER OF SCIENCE
MAJORING IN PLANT
BREEDING**

KATONDO, Harlod Macmillan*

Dissertation Title: *ASSESSMENT OF GENETIC DIVERSITY AND NUTRITIONAL VALUE OF THE SOUTH AFRICAN AMARANTH GERMPLASM*

Supervisor: Dr A van Biljon

Co-supervisor: Dr A Minnaar-Ontong

SHAWA, Hilda Chilekeni

Dissertation Title: *INFLUENCE OF ENVIRONMENTAL CONDITIONS ON NUTRITIONAL VALUE OF QUALITY PROTEIN MAIZE*

Supervisor: Prof MT Labuschagne

Co-supervisor: Dr A van Biljon

**MASTER OF SCIENCE
MAJORING IN PLANT HEALTH
ECOLOGY**

BESTER, Marlese Christine

Dissertation Title: *INOCULATION TECHNIQUES AND EVALUATION METHODOLOGIES FOR*

SCLEROTINIA SCLEROTIORUM HEAD AND STEM ROT IN SUNFLOWER AND SOYBEAN

Supervisor: Prof NW McLaren

Co-supervisor: Mrs LA Rothmann

**MASTER OF SCIENCE
MAJORING IN RISK ANALYSIS**

MAMBA, Mpendulo Wiseman

MOTAKE, Masuhle Elliot*

**MASTER OF SCIENCE
MAJORING IN ZOOLOGY**

BOTES, Mariska*

Dissertation Title: *FORAGING BEHAVIOUR AND HEALTH STATUS OF RED-BILLED OXPECKERS (**BUPHAGUS ERYTHORYNCHUS**) IN THE KRUGER NATIONAL PARK, SOUTH AFRICA*

Supervisor: Dr M Ndlovu

Co-supervisor: De AD Pérez-Rodríguez

LESENYEHO, Setjhaba Kenneth

Dissertation Title: *RESISTANCE OF THE AFRICAN BLUE TICK (**RHIPICEPHALUS (BOOPHILUS) DECOLORATUS**) TO MACROCYCLIC LACTONES IN THE EASTERN CAPE, SOUTH AFRICA*

Supervisor: Ms EMSP van Dalen



MOGOROSI, Lefetlho Katlego

Dissertation Title: *A GENERAL DISEASE AND PARASITE SURVEY OF COMMERCIALY IMPORTANT FISH OF THE FREE STATE*

Supervisor: Prof LL van As

Co-supervisors: Prof JG van As and Dr KW Christison

NAMPA, Gosego

Dissertation Title: *MUTUALISTIC ASSOCIATION BETWEEN NUM-NUM (**CARISSA BISPINOSA**) AND TERMITARIA OF SNOOTED HARVESTER TERMITES (**TRINERVITERMES TRINERVOIDES**) IN A SEMI-ARID SAVANNA*

Supervisor: Dr M Ndlovu

POTTINGER, Michelle

Dissertation Title: *THE DISTRIBUTION OF RHIPICEPHALUS (BOOPHILUS) MICROPLUS AND RHIPICEPHALUS (BOOPHILUS) DECOLORATUS ON A FARM IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA*

Supervisor: Ms EMSP van Dalen

DEAN'S MEDAL

AWARDED TO A STUDENT WHO ACHIEVED THE BEST RESULTS IN RESPECT OF A MASTER'S DEGREE IN THE FACULTY OF NATURAL AND AGRICULTURAL SCIENCES DURING THE YEAR 2018

Tshanduko Mutandanyi

Master of Science Majoring in Geohydrology

SENATE MEDAL

AWARDED TO THE STUDENT WHO ACHIEVED THE BEST OVERALL RESULTS IN RESPECT OF UNDERGRADUATE AND POSTGRADUATE QUALIFICATIONS IN ALL FACULTIES AT THE UNIVERSITY DURING THE YEAR 2018

Tshanduko Mutandanyi

Master of Science Majoring in Geohydrology



ACTING DEAN |

PROF JM Tsoka-Gwegweni

DOCTORAL DEGREES

DOCTOR OF PHILOSOPHY IN HEALTH PROFESSIONS EDUCATION

COETZEE, Lauren Shelley

Lauren Coetzee hails from the Eastern Cape, where she matriculated from Westering High in Port Elizabeth. She obtained her Bachelor of Optometry degree cum laude from the University of Johannesburg in 2005. Furthering her studies, she graduated from UNISA with a Bachelor of Commerce in Economics and an honours degree with distinction in Business Management. After seven years in private practice, she joined the Department of Optometry at the University of the Free State in 2012. Her master's and doctoral degrees were undertaken in Health Professions Education in the fields of research attitude and research culture, respectively.

With her thesis, ***A FRAMEWORK FOR ENHANCING THE RESEARCH CULTURE WITHIN THE FACULTY OF HEALTH SCIENCES AT THE UNIVERSITY OF THE FREE STATE***, the candidate aimed to determine the existing research culture and related factors in the Faculty of Health Sciences (FHS) at the University of the Free State (UFS). The research was designed as an evaluative study with elements of case-study evaluation and improvement-oriented evaluation. Methods included a literature review, questionnaire survey, nominal group discussions, and validation meetings to gather both quantitative and qualitative data. The final framework to enhance the research culture at the FHS at the UFS was collated through an integration of all data collected. The framework gives insight into the factors required to inculcate a research culture that is driven by successful knowledge creation and dissemination. It provides a departure point for further research on the application of the proposed framework in different contexts.

Promoters: Prof EC Janse van Vuuren

Co-promoters: Dr AO Adefuye

NEL, Corné Pieter Gustav

Corné Pieter Gustav Nel was born in Roodepoort on 1 December 1981, matriculating from Jim Fouché Secondary School with seven distinctions in 1999. He obtained a bachelor's degree in Medicine and Surgery (2004) and a Magister in Health Professions Education (2005), both with distinction, from the University of the Free State. In 2017, he obtained a master's degree in Plastic and Reconstructive Surgery at the University of KwaZulu-Natal. He has held a fellowship of the College of Plastic Surgeons and Reconstructive Surgery since 2014, was appointed as a consultant in the Department of Plastic Surgery at the University of KwaZulu-Natal in 2015 and is currently in private practice in Gauteng.

With his thesis, ***SIMULATION IN POSTGRADUATE PLASTIC SURGERY EDUCATION AND TRAINING***, the candidate endeavours to investigate and find reasoning that could be transformed to scientific argumentation for the inclusion of clinical simulation in postgraduate plastic surgery education and training programmes as an additional teaching method from which



specialists in training can benefit. Together with the existing clinical and bedside teaching, the implementation of the findings must be seen as a way to enhance the training of plastic surgeons, and not to replace it. The study serves as a directive for postgraduate plastic surgery education and training by means of suggested guidelines, including recommendations on how simulation may be utilised to improve students' knowledge, skills, and professional conduct. The candidate emphasises the enhancement of patient safety and the increased efficiency of well-trained students and registrars, leading to lower costs in the clinical environment. A number of publications were finalised from this research.

Promoters: Prof GJ van Zyl and Prof MJ Labuschagne

SCHOOL OF CLINICAL MEDICINE

DOCTOR OF PHILOSOPHY WITH SPECIALISATION IN CARDIOTHORACIC SURGERY

LAKER, Leana

Leana Laker was born in Klerksdorp, North-West, on 28 November 1988. She received her secondary education in Klerksdorp, where she matriculated from Westvalia High School in 2007. She obtained the degree BSc in Human Molecular Biology in 2010, and a BMedScHons degree with distinction in 2011 from the University of the Free State. She started her career as medical scientist, working as a research assistant at the University of Oxford in 2012. In 2014, she was appointed in the Department of Cardiothoracic Surgery at the University of the Free State, where she is presently employed as a researcher.

With her thesis, ***THE EVALUATION OF A NOVEL DECELLULARIZATION AND STERILIZATION PROCESS ON BOVINE PERICARDIAL TISSUE***, the candidate developed a pericardial scaffold for use in cardiovascular surgery and heart-valve substitutes. This immunologically inert pericardial scaffold can be used either as a tissue scaffold for implantation with in vivo recellularisation, thereby creating a living patch with growth potential, or can be treated with glutaraldehyde and detoxified as a new-generation bovine pericardial patch. This decellularisation process resulted in a scaffold with retained tissue strength and structure, which is suitable for cellular ingrowth. The candidate describes the synergistic effect of the combined use of different detergents and demonstrates advantages of this process over individual detergent protocols. The development of standardised decellularisation techniques and quality-control processes for the production of decellularised bovine pericardial scaffolds completes the study.

This study supports a worldwide patent application, to date granted in Europe, India, and Canada.

Promoter: Prof FE Smit

Co-promoter: Prof PM Dohmen

DOCTOR OF PHILOSOPHY WITH SPECIALISATION IN MEDICAL PHYSICS

ACHO, Sussan Nkwenti

Sussan Acho was born in Bamenda on 15 November 1965. She received her secondary education at Our Lady of Lourdes Secondary School in Bamenda in 1982, and later attended CCAST Bambili where she obtained her GCE Advanced level certificate in 1984. In 1987, she graduated with a BScHons degree in Maths and Physics at the University of Wales and an



MSc degree in Physics at the University of Birmingham (England) in 1988. She started her career as a medical physicist and as a lecturer in the Department of Medical Physics at the University of the Free State in 2001, where she currently resides.

With her thesis titled, **SEGMENTATION AND QUANTITATIVE CHARACTERIZATION OF BREAST MASSES IMAGED USING DIGITAL MAMMOGRAPHY**, the candidate makes a significant contribution to the field of quantitative mammographic image analysis. Her study investigated and quantified the changes in shape-based descriptors due to changes in the location of the initial level-set contour in region-based active contour models in delineating mammographic masses and proposed new methods to eliminate contour leakage and contour traps in active contour-segmentation models. Furthermore, the study proposed a contextual region-of-interest model to assess the variation of texture features from the core to the periphery of biopsy-proven malignant masses as a concept of tumour modelling in mammography. She also investigated the variation of texture features between grade 2 and grade 3 masses as a concept of tumour grading in mammography. Her contribution aids in the understanding of the quantitative analysis of mammographic images.

Promoter: Dr WI Duncombe Rae

SCHOOL OF NURSING

DOCTOR OF PHILOSOPHY IN NURSING

NOGE, Sesi Roslina

Sesi Roslina Noge was born on 18 August 1959 on a farm near Bethlehem in the Free State. She matriculated at Tseki Senior Secondary School, Qwaqwa, in 1979. She obtained her Nursing diploma at the Boitumelo Hospital College of Nursing in 1983. In 1994, she graduated with a BCur degree from Unisa. She obtained diplomas in Nursing Education from Unisa and in Psychiatry from the UFS in 2001. Thereafter followed the Hons in Health Management Studies in 2006 and a master's in Public Health in 2011, both from Wits University. She currently serves as the Chief Executive Officer of Bongani Regional Hospital in the Free State.

With her thesis, **STRATEGIES TO REDUCE STILLBIRTHS IN THE FEZILE DABI DISTRICT, SOUTH AFRICA**, the candidate contributes to the nursing theory by identifying causes of stillbirths and developing preventive strategies to reduce stillbirths. She used multiple qualitative methods to explore the beliefs and practices of relevant participants who experienced stillbirths with regard to causes and possible solutions for stillbirth and compared the information collected from the Perinatal Problem Identification Programme's records of mothers (participants). The candidate based her data analysis on the Wittmann-Price Emancipated Decision-Making Model and concluded that specifically the lack of empowerment, social norm exploitation, and an inflexible environment is contributing to the high number of stillbirths. She concluded that midwives should be emancipated to empower pregnant women regarding their healthcare and that the Perinatal Problem Identification Programme should include the social determinants of health as identified in her study.

Promoter: Prof Y Botma

Co-promoter: Prof WJ Steinberg



NYONI, Champion Nestai

Champion Nestai Nyoni was born in Bulawayo, Zimbabwe, on 9 August 1986. He received his high school education at Northlea High School, where he completed his A levels in 2004. He obtained a BSc in Nursing Science with honours from the University of Zimbabwe in 2009 and the Master of Social Science in Nursing from the University of the Free State in 2016. He served as an educator and faculty development coordinator at Paray School of Nursing in Lesotho for eight years and is currently pursuing postdoctoral research in the School of Nursing at the University of the Free State.

With his thesis, ***A FRAMEWORK TO IMPLEMENT AND SUSTAIN A CURRICULAR INNOVATION FOR A MIDWIFERY PROGRAMME IN LESOTHO***, the candidate made a significant contribution to midwifery education by proposing a framework to support a newly implemented competency-based midwifery programme. Through multiple-methods research, the candidate investigated the fidelity of the implementation of the new midwifery programme against international midwifery education standards by engaging administrators, educators, and students. Underpinned by the model of the theory of change, evidence in sustaining curricular innovations, and the experience of stakeholders, the candidate further collaborated in designing a framework to implement and sustain the competency-based midwifery programme. The proposed framework has the potential of improving the education of midwives in Lesotho, further increasing midwifery graduate competencies that may positively influence the perpetually high maternal and neonatal mortality indicators in Lesotho. Three articles emanating from this work have been published in international journals.

Promoter: Prof Y Botma

SCHOOL OF PATHOLOGY

DOCTOR OF PHILOSOPHY WITH SPECIALISATION IN MEDICAL MICROBIOLOGY

RUKASHA, Ivy

Ivy Rukasha was born in Bulawayo and received her secondary education in Harare, where she matriculated at Visitation Makumbi High in 2000. She obtained her honours and MSc degrees in the Department of Medical Microbiology at the University of Pretoria in 2010 and 2013, respectively. In 2014, she enrolled for her PhD degree at the University of the Free State. She started her career in the Centre for Tuberculosis at the National Institute for Communicable Diseases (NICD) in 2013. In 2015, she was appointed as a medical scientist in the Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses at the NICD, where she is currently based.

With her thesis titled, ***ANTIMICROBIAL SUSCEPTIBILITY TESTING AND SEQUENCING OF MYCOBACTERIUM TUBERCULOSIS CLINICAL ISOLATES***, the candidate focused on changing the currently available drug-resistance testing for TB, by evaluating quantitative susceptibility testing as a replacement for the conventional qualitative-based methods. In addition, the candidate investigated creeps in minimum inhibitory concentrations (MICs) for TB over three years, as well as the impact of genotypic polymorphisms on MICs. Her study showed that quantitative drug susceptibility testing is a better alternative, facilitating therapeutic decision-making and therapeutic drug monitoring required to optimise regimen efficacy. In



addition, her study showed that up to 27% of MDR-TB patients might benefit from a treatment regimen that includes RFB as a substitute for RIF resistance, and different drug-resistance mutations were associated with different MIC ranges. The results of her research will help in guiding clinical decision-making and in providing new insights on the genotypic and phenotypic evolution of MTB drug resistance.

Promoter: Dr HM Said

Co-promoters: Prof HA Koornhof and Prof NA Ismail

DOCTOR OF PHILOSOPHY WITH SPECIALISATION IN VIROLOGY

BULANE, Atang

Atang Bulane was born on 25 April 1982 in Maseru, Lesotho. She matriculated at St Catharine's High School in 2000. She attained a Bachelor of Science degree in Biology and Chemistry at the National University of Lesotho in 2006. She graduated with a Bachelor of Science Honours in Medical Microbiology in 2009, and a Master of Science in Medical Microbiology with distinction at the University of Pretoria in 2012. She is currently employed as a research officer at the National Institute for Communicable Diseases in Johannesburg.

With her thesis, ***DETECTION OF HUMAN PAPILLOMAVIRUS TYPES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA***, the candidate contributes to knowledge regarding the prevalence of human papillomavirus (HPV) in patients with confirmed head and neck squamous cell carcinoma. Using molecular techniques and archival tissues, the candidate identified HPV strains currently circulating within the selected cohort of patients. The information provides a baseline of data that has application to determine the impact of vaccination against HPV on the burden of disease. The research further investigated the potential for selected biomarkers to have application as early markers of disease. The research confirms the presence of HPV among a cohort of patients with carcinoma and the application of molecular techniques to contribute valuable data regarding the genetic relationship of the strains with geographically distinct isolates of the virus.

Promoters: Prof FJ Burt and Prof D Goedhals

MUNSAMY, Yuri

Yuri Munsamy was born in Durban on 25 February 1988. She received her secondary education in Bloemfontein, where she matriculated at Eunice Girls High School in 2005. She completed her tertiary education at the University of the Free State. She attained the Bachelor of Science degree in Microbiology with distinction in 2009 and the Bachelor of Science Honours degree in Microbiology in 2010. In 2014, she attained the degree Master of Science in Microbiology.

With her thesis, ***CHARACTERISATION OF THE HUMAN PAPILLOMAVIRUS GENOME AND P53 MUTATIONS IN HEAD AND NECK SQUAMOUS CELL CARCINOMAS***, the candidate makes a contribution to human papillomavirus (HPV) research. With this contribution, she characterised the genome of HPV isolates associated with head and neck cancer by performing deep sequencing analyses of complete viral genomes obtained from clinical specimens and investigated the contribution



of p53 mutations to head and neck cancer. Novel mutations were identified in the isolates. Evidence of p53 mutations was presented, adding to research on the synergistic interaction of HPV with host factors. The study adds to the growing body of literature, elucidating the underlying molecular mechanisms of HPV infection in head and neck cancer in sub-Saharan Africa.

Promoter: Prof FJ Burt

TIPIH, Thomas

Thomas Tipih was born on 11 March 1982 in the Buhera district, Manicaland province, Zimbabwe. He completed his secondary education in 2000 at Nyashanu High School. He attained a Bachelor of Medical Laboratory Science Honours degree at the University of Zimbabwe in 2005 and a Master of Science degree in Virology from Liverpool John Moores University, United Kingdom, in 2011. His career as a medical laboratory scientist began in 2005 in Zimbabwe. In 2007, he moved to Botswana where he was placed in the second position as Performer of the Year 2012 in the Ministry of Health Achievement Awards and received a Presidential Public Service Excellence Award in 2012/13.

With his thesis, **IMMUNOGENICITY OF SINDBIS BASED REPLICONS FOR CRIMEAN-CONGO HEMORRHAGIC FEVER VIRUS**, the candidate makes a meaningful contribution to the search for a vaccine against the Crimean-Congo haemorrhagic fever virus (CCHFV). CCHFV can manifest as a viral haemorrhagic syndrome in humans, with mortality rates of up to 30%. Currently, there are no internationally approved vaccines or therapies against the virus. Using recombinant molecular techniques, he developed DNA replicon vaccines based on the Sindbis virus genome, expressing the glycoproteins and nucleoprotein of CCHFV. The candidate's vaccines were characterised in vitro and demonstrated cellular and humoral immune responses against the viral proteins in an animal model. His research provides a foundation for further Sindbis virus replicon-based vaccine development against the Crimean-Congo haemorrhagic fever virus.

Promoter: Prof FJ Burt

VILJOEN, Natalie

Natalie Viljoen was born in Bloemfontein on 16 August 1990. She completed her secondary education in 2008 at Sand du Plessis High School. She attained her Bachelor of Science degree in Medical Microbiology and Biochemistry in 2011, Bachelor of Medical Science Honours degree in Microbiology and Virology in 2012, and Master of Medical Science degree in Virology in 2014 from the University of the Free State, all with distinction.

With her thesis, **INNATE IMMUNE SIGNALLING INDUCED BY CRIMEAN-CONGO HAEMORRHAGIC FEVER VIRUS PROTEINS IN VITRO**, the candidate makes a contribution to research on the Crimean-Congo haemorrhagic fever virus (CCHFV). With this contribution, she characterised the virus-host interactions between CCHFV and innate immune signalling induced by CCHFV non-structural protein encoded on the M-segment (NSM) protein and ovarian tumour-like (OTU) protease, using gene expression profiling. The CCHFV NSM protein and OTU protease demonstrated the ability to dysregulate innate immune signalling. The results suggest that the OTU protease is a potential target for development of therapeutics. Hazara virus (HAZV), which is related to CCHFV, was evaluated as a potential surrogate model for CCHFV innate immune signalling without the requirement of high biocontainment facilities. Innate immune profiling of HAZV infection revealed a mechanism of innate immune dysregulation by targeting interferon-beta gene expression, suggesting that HAZV has potential application as a surrogate model for CCHFV innate immune modulation.

Promoters: Prof FJ Burt and Prof D Goedhals



DEAN |

PROF PD VERMEULEN

DOCTORAL DEGREES

AGRICULTURAL SCIENCES

DOCTOR OF PHILOSOPHY MAJORING IN FOOD SCIENCE

VAN WYNGAARD, Barbara Elizabeth

Lize van Wyngaard was born on 3 June 1986 and grew up in Koffiefontein. She matriculated at the Koffiefontein High School in 2004. She obtained a BSc Home Economics degree in 2010, a BSc Agriculture (Food Science) honours degree with distinction in 2012 (together with a prize for the best BSc Agriculture Hons student), and an MSc Agriculture (Food Science) in 2015, all at the University of the Free State.

With her thesis, ***THE EFFECT OF DIETARY OMEGA-3 FATTY ACIDS WITH SPECIFIC REFERENCE TO ECHIUM SEED OIL ON PORK QUALITY***, the candidate made a significant contribution to current knowledge regarding omega-3 fatty-acid metabolism in pigs and the effect of different dietary omega-3 sources (soya oil, linseed oil, Echium oil, and fish oil) on pig production and meat quality. The growth and carcass characteristics of pigs, physicochemical properties of fat tissue, sensory properties, and lipid stability of meat and meat products were not influenced by dietary Echium-seed oil supplementation. Dietary Echium-seed oil supplementation resulted in elevated stearidonic, eicosapentaenoic, and docosahexaenoic acid levels in the back fat, belly fat, and muscle of pigs. This thesis will result in at least five publications in scientific journals. The candidate was commended by examiners for the holistic approach of the research, going from farm to fork and even beyond that, to value-added meat products.

Promoters: Prof A Hugo and Dr PE Strydom

Co-promoters: Prof CH Pohl-Albertyn, Dr FH de Witt, and Dr A Kanengoni

DOCTOR OF PHILOSOPHY MAJORING IN PLANT BREEDING

AMAH, Delphine Mutanga

Delphine Amah was born in Cameroon in 1976. She attended primary and secondary school in Mankon (Bamenda, Cameroon). She obtained a BSc degree in 1997 and an MSc degree in 2000, both in Microbiology, from the University of Buea, Cameroon. She started her career at the International Institute of Tropical Agriculture (IITA) in Yaounde, Cameroon in 2002, and moved to the IITA, Ibadan, Nigeria, in 2012 as regional breeding manager and associate scientist for Plantain and Banana, a position she still holds.



With her thesis, ***GENETIC VARIABILITY OF CAROTENOIDS AND POLYPLOID INDUCTION TOWARDS VITAMIN A BIOFORTIFICATION IN PLANTAIN (MUSA SPP.)***, the candidate focused on high provitamin A carotenoid (pVAC) plantains (a group of bananas that is a staple food for people in West and Central Africa). High variability for carotenoids was evident in the 204 accessions evaluated, and predominant carotenoids were α -carotene (38,67%), trans β -carotene (22,08%) and lutein (22,08%). Ripening led to a decrease in pVAC content from the unripe to the ripe to the overripe stages, accompanied by a corresponding increase in lutein content. To explore induced polyploidization as a breeding strategy for pVAC enhancement in plantains, 10 induced tetraploids derived from six diploid cultivars were evaluated for agronomic attributes, carotenoid content, and fertility. Results indicated that induced polyploidisation can generate useful genetic material that could be incorporated in hybridisation programmes aimed at producing high pVAC triploids.

Promoter: Prof MT Labuschagne

Co-promoters: Prof R Swennen and Dr A Biljon

NDORO, Oswell Farayi

Oswell Ngoro was born in Zimbabwe in 1969. He completed his secondary schooling in Mutare, Zimbabwe, in 1989. He obtained the degrees BSc (Crop Science) in 1992, MSc (Crop Science with specialisation in Plant Breeding) in 2003, and MBA in 2012, all at the University of Zimbabwe. He was a research associate in maize breeding at CIMMYT (Harare) from 2010 to 2017. Before 2010, he was a consultant for Alliance for a Green Revolution in Africa (AGRA) in Nairobi and Lusaka. He is currently a consultant in maize breeding at CIMMYT (Harare).

With his thesis, ***USE OF EXOTIC GERMLASM TO ENHANCE THE PERFORMANCE OF LOCAL MAIZE***, the candidate illustrated quicker and easier ways of identifying usable exotic inbreds in local maize-breeding programmes. Exotic germplasm included temperate inbreds with expired Plant Variety Protection certificates from the USA, and tropical exotic inbreds from Kenya, Mexico, Colombia, and Nigeria. The usefulness of inbred lines was investigated through the evaluation of F1 single-cross and three-way hybrids. Hybrids were evaluated in environments approximating the local farmers' conditions of low phosphorus, low nitrogen, random stress, and optimal conditions. The study demonstrated the large potential of local x exotic crosses as sources of multiple pedigree starts. Inbred lines from Mexico lowland tropics and Kenya produced the best hybrids in combination with local lines. This study challenged breeders' fears concerning the use of exotic germplasm by identifying superior marketable hybrids without going through the lengthy process of backcrossing.

Promoter: Prof MT Labuschagne

Co-promoters: Dr P Setimela, Dr C Magorokosho, and Dr N Lebaka

DOCTOR OF PHILOSOPHY MAJORING IN PLANT PATHOLOGY

ALLEMANN, Anette

Anette Allemann was born in Caledon on 29 July 1958. She matriculated at the Menlo Park High School, Pretoria, in 1975. She graduated with a BSc (Agric) majoring in Microbiology in 1980 and a BSc (Agric) Hons in Microbiology in 1981 at the University of Pretoria. She was subsequently appointed as Production Manager at Stimuplant CC in Pretoria from 1992 until 2004. In 2005, she was appointed as a research assistant in the Department of Chemistry, University of the Free State, and in 2008 she obtained an MSc (Agric) in Plant Pathology with distinction at the UFS.



With her thesis, ***THE EFFECT OF HERBICIDE FORMULATIONS AND SOYBEAN GENOTYPE ON THE RELATIONSHIP BETWEEN BENEFICIAL ORGANISMS AND ROOT PATHOGENS***, the candidate makes a significant contribution to our understanding of plant-microbe interactions. Her research demonstrated that exposure of symbiotic rhizobacteria of soybean (*Bradyrhizobium japonicum*) to different formulations of the herbicide glyphosate, showed no significant reduction of their ability to form nitrogen-fixing nodules. Genetic modification of a soybean line (A5409RG) by insertion of the RR® gene also did not diminish the ability of rhizobacteria to cause nodulation. The candidate established that soybean plants exposed to three soil-borne pathogens, *Fusarium oxysporum*, *Macrophomina phaseolina*, and *Sclerotium rolfsii* showed a decrease in dry mass when ammonium nitrate (NH_4NO_3) was used as nitrogen fertiliser, but not when they were inoculated with rhizobacteria. The findings of her innovative study will make a significant impact on knowledge of herbicides and their influence on soil microbial ecology.

Promoter: Prof WJ Swart

Co-promoter: Prof N McLaren

DOCTOR OF PHILOSOPHY MAJORING IN SUSTAINABLE AGRICULTURE

MUCHESA, Evans

Evans Muchesa was born in Harare, Zimbabwe. He matriculated at Foka College, Norton, in 2000, after which he obtained his Bachelor of Science degree in Agribusiness during 2005 (Solusi), and Bachelor of Institutionalised Agrarian Honours in Extension in 2010 from the University of Pretoria. He proceeded to complete his master's degree in Agricultural Science in 2013 at the University of Pretoria. During 2005, he started his career as a socio-economist in Chegutu and was later appointed as Regional M&E Associate at the American Institute of Researchers in 2012. Currently he is Projects and Research Manager at the Siyakhana Initiative, which is involved in promoting healthier communities.

With his thesis, ***EFFICIENCY OF COMMUNAL FARMERS' MARKET SYSTEMS IN THE MHONDORO-MUBAIRA DISTRICT, MASHONALAND WEST, ZIMBABWE***, the candidate provides the most comprehensive and latest updated empirical contribution to the communal market system in Zimbabwe. The study originated from practical problems faced by the communal farmers in Mhondoro-Mubaira regarding their market system. The research focuses on the communal market system looking at the 'efficiencies', which are; the support system (extension); contribution of ICT and social media, rural and non-rural economies and local market systems. The study presents a point of departure for other studies in communal market systems in Zimbabwe or Africa.

Promoter: Dr JA van Niekerk

Co-promoters: Dr BD Nkosi and Prof EM Zwane

NGWENYA, Hlamalani Judith

Hlamalani Judith Ngwenya was born on 22 February 1972 in Alice, Limpopo Province. She matriculated in 1988 at Xingwedzi High School and obtained her Senior Secondary Teacher's Diploma and Bachelor of Education in 1992 from the University of Zululand. She progressed to complete her honours in 1997 and Master of Consumer Sciences in 2002. Ngwenya is



passionate about teaching, and promptly started her career as teacher and lecturer at the College of Agriculture between 1998 and 2004. Her growing interest in the field of agricultural extension led to her active involvement in the global agricultural, food, and natural resources arena.

With her thesis, **FACILITATION OF SYSTEMIC CHANGE: OUTCOMES AND IMPACT OF COMPETENCE DEVELOPMENT TOWARDS TRANSFORMATION OF AGRICULTURAL EXTENSION SERVICE DELIVERY SYSTEM IN SOUTH AFRICA**, the candidate makes a contribution to ongoing global discourse on the capacities required to support farmers in the 21st century. With this contribution, she attempts to explain and provide evidence of the catalytic role of facilitation of systemic change at three levels of the service delivery system; that is 1) Organising the demand side (through building civil society and strengthening local organisational capacities); 2) Responding to demand (through managing and organising the service delivery); and 3) Supporting the response (through managing the organisational capabilities and change management). The results show that extension officers who have acquired facilitation competencies to manage systemic change and have observed immediate tangible outcomes, were highly likely to utilise their skills in other areas of their operations over a significant period of time.

Promoter: Dr JA van Niekerk

Co-promoter: Dr JW Swanepoel

ODUNZE, Daisy Ifeoma

Daisy Odunze was born in Enugu in 1983. She received her secondary education in Onitsha where she matriculated in 2000. Thereafter, she proceeded to complete her BSc (Agricultural Economics and Extension) in 2005 from the Federal University of Technology in Nigeria and MBA (Business Administration) in 2009 from the National University of Science and Technology in Zimbabwe. She obtained her master's degree in Sustainable Agriculture in 2015 from the University of the Free State. As of 2011, she joined the National University of Science and Technology in Bulawayo, Zimbabwe, as part of their academic staff.

With her thesis, **ANALYSIS OF THE IMPACT OF ENTREPRENEURSHIP IN AGRIBUSINESS VALUE CHAINS ON HOUSEHOLD FOOD SECURITY LEVELS IN NIGERIA; CONSTRAINTS, PROSPECTS, AND POLICIES**, the candidate contributes to academic discussions on entrepreneurship. Using a mixed-method approach, she sampled 600 farmers and processors in three food value chains of Nigeria to understand if entrepreneurship through process, product, and functional upgrading impact on household food security levels. The study also analysed the constraints and prospects for entrepreneurship and the role of policy in promoting entrepreneurship in these sectors. Findings show that while numerous prospects for entrepreneurship exist in these value chains, especially for secondary industrial products, the level of entrepreneurship engaged in by farmers and processors do not significantly impact on their food security levels. The study argued that limited government support, lack of finances, knowledge, and requisite skills limits the ability of farmers and processors to take advantage of these prospects.

Promoter: Prof I Mohammed

Co-promoter: Dr JA van Niekerk

BUILDING SCIENCES

DOCTOR OF PHILOSOPHY MAJORING IN URBAN AND REGIONAL PLANNING

MATAMANDA, Rajab Abraham

Rajab Abraham Matamanda, born on 19 July 1986 in Chinhoyi, Zimbabwe, received his secondary education at Chinhoyi No. 2 High School, where he matriculated in 2004. In 2013, he graduated with a BScHons degree in Urban and Regional Planning



from the University of Zimbabwe, where he also obtained his MSc degree in Social Ecology in 2015. He commenced his career as a researcher at the Centre for Applied Social Sciences, where he worked on research projects. Since 2014, Matamanda has authored and co-authored more than 35 peer-reviewed research articles in internationally recognised journals, as well as several chapters in edited books.

With his thesis, ***EXPLORING EMERGING HUMAN SETTLEMENT FORMS AND URBAN DILEMMAS NEXUS: CHALLENGES AND INSIGHTS FROM HOPLEY FARM, HARARE, ZIMBABWE***, the candidate contributed to the body of knowledge on urban growth and settlement forms in Africa. Through the use of the applied systems-analysis methodology, the candidate goes beyond the usual water and sanitation focus and includes issues in public transport and safety. Situated in a politically sensitive landscape, his study makes a methodological contribution to conducting urban planning research under restrictive conditions. The candidate found that planning and development of human settlements in Harare is riddled in politics of difference and alienation of the urban poor, resulting in the perpetuation of urban inequality. He concludes that issues regarding citizens' access to basic services are fluid and require concerted effort from various stakeholders and ministries instead of adopting a silos approach to the understanding and solving of urban dilemmas.

Promoter: Dr TN Mphambukeli

Co-promoter: Prof I Chirisa

MULEYA, Nicholas

Nicholas Muleya was born on 14 April 1982 in Beitbridge, Matabeleland South, Zimbabwe. He completed A level at Zezani, Beitbridge, in 2002, and later obtained a Bachelor of Science honours degree in Rural and Urban Planning at the University of Zimbabwe in 2008. He graduated with a Master of Urban Design at the National University of Science and Technology in Bulawayo in 2014. His career as an urban development practitioner began in 2009, when he joined the Beitbridge Rural District Council as urban planner; he is currently with the Beitbridge Municipality as Housing Officer. He is also a part-time tutor at the Zimbabwe Open University (ZOU).

With his thesis, ***SENSATION AND PERCEPTION: AN EXPLORATION OF HUMAN MULTI-SENSORY EXPERIENCES AND PREFERENCES TO ENHANCE PUBLIC SPACE PLANNING, POLICY AND PRACTICE IN THE CITY OF BULAWAYO, ZIMBABWE***, the candidate contributes to literature on public space quality from a multisensory perspective. Using an exploratory sequential mixed-method research design, the candidate purposively sampled 33 public-space users and 14 experts; he systematically sampled 400 public-space users to understand and explain the multisensory interactions of human beings with streets and parks. In line with the study's stance that public space quality must be derived from the user's multisensory experiences and preferences, it was found that the sensory quality of public space in Bulawayo is generally unsatisfactory. The study therefore presents public-space quality-assessment tools, policies, principles, and subsequently a 'Sensory Public Space Quality Model' to be used in the production and regeneration of human-receptive public space.

Promoter: Prof MM Campbell

Co-promoters: Mr T Stewart and Mrs M Bitzer

DOCTOR OF PHILOSOPHY WITH SPECIALISATION IN ARCHITECTURE

VAN DER VYVER, Elizabeth Yolanda

Born and educated in Pretoria, Yolanda van der Vyver counts among her achievements the cum laude she obtained in matric at Hoërskool Menlopark, bachelor's and master's degrees in Architecture, as well as an honours degree in French, all earned at the University of Pretoria. It is in this city that she practices as an architect and arbitrator.



With her thesis, ***A CRITICAL INTERPRETATION OF THE TEMPORAL IMPACT OF LANDSCAPE, SPACE AND POWER ON THE BUILT ENVIRONMENT OF CHURCH SQUARE, PRETORIA***, the candidate engaged with the powers behind the processes of creating the precinct as an urban space and revealed the embedded social and spatial relationships. Distinct periods were identified, beginning with the change in landscape from agricultural settlement to town, Boer-Brit dynamics, the era of apartheid during which the statue of Paul Kruger was relocated there, and post-apartheid protests, which prove that Church Square remains loaded with political meaning. Yet, the name endures, despite the demolition of the original place of worship some 115 years ago. The combination of pictorial recordings of change over time and diagrams prepared by the surveyors general provided unique insights into the powers that shaped and reshaped the landscape, as a *palimpsest*, and confirmed the notion that landscapes are always temporal and invoke memories.

Promoters: Prof W H Peters and Prof PNJ Duvenage

NATURAL SCIENCES

DOCTOR OF PHILOSOPHY MAJORING IN BIOCHEMISTRY

FOLORUNSO, Olufemi Samuel

Olufemi Samuel Folorunso was born on 14 April 1979 in Ibadan, Oyo State of Nigeria. He matriculated as a senior prefect at Igbo-Elerin Grammar School in 1996. He graduated with distinction in his BScHons degree at Lagos State University in 2004 and his MSc at the University of Lagos in 2010. His career began as a graduate assistant in his alma mater and rose to the rank of Assistant Lecturer in 2010 at Crawford University in Igbesa, Ogun State, Nigeria. He previously worked on the antimicrobial activities of the volatile oil of medicinal plants, enteropathogenic bacteria, and cancer therapy in an animal model.

With his thesis, ***IDENTIFICATION OF ENGINEERED YEAST STRAINS FOR THE PRODUCTION OF ROTAVIRUS VP6-BASED VACCINE CANDIDATES***, the candidate contributes to the development of non-replicative rotavirus vaccines for use in sub-Saharan Africa. Making use of a wide-range yeast-expression system, several yeast strains were engineered and screened for the production of recombinant rotavirus capsid proteins. Specifically, the candidate engineered *Kluyveromyces lactis* for the extracellular secretion of the immunodominant protein, VP6. This viral capsid protein is known to induce protection in animal models and is an important vaccine target. He identified high-yield producing clones, using a high-throughput deep-well screen during a scientific visit to the National Institute of Industrial Technology in Argentina. Extracellular secretion of VP6 will considerably reduce downstream processing, and subsequently lower production costs for subunit vaccines. Results have been presented at various conferences, including an international conference.

Promoter: Prof HG O'Neill

Co-promoter: Prof J Albertyn

MALEKE, Maleke Mathews

Maleke Maleke was born in Odendaalsrus on 15 August 1988. He received his secondary education in Odendaalsrus, where he matriculated at the Eldoret Secondary School in 2006. He obtained the degree BSc Microbiology in 2009, BScHons



(Biochemistry) in 2010, and the MSc (Biochemistry) in 2013 at the University of the Free State. He is currently appointed as postdoctoral fellow in the Department of Microbial, Biochemical and Food Biotechnology at the University of the Free State.

With his thesis, ***INSIGHTS INTO RARE EARTH METAL MICROBE INTERACTIONS USING A KNOWN METAL RESISTANT BACTERIUM AND A SITE-SPECIFIC ISOLATE***, the candidate contributes to our knowledge on the biotechnological potential of metal-resistant bacteria for the bio-recovery of rare-earth metals. Using both a mesophilic (*Clostridium* sp.) and a thermophilic (*Thermus scotoductus* SA-01) bacterium able to interact with various metals, and various state-of-the-art techniques (i.e., Fourier transmission infrared spectroscopy, electron microscopy, and high-resolution X-ray spectroscopy), he found that these bacteria have the ability to bio-reduce and biomineralize Eu^{3+} . This knowledge is crucial if we aim to design new metal bio-recovery strategies which are eco-friendly and more cost-effective than traditional methods and can turn otherwise unprofitable deposits of rare-earth metals into profitable ones, which will have a positive impact on the economy of the country.

Promoter: Dr J Castillo

Co-promoters: Prof A Valverde, Dr ED Cason, and Dr J Vermeulen

TOLMIE, Carmien

Carmien Tolmie was born on 16 June 1989 in Bloemfontein. She obtained a BSc in Molecular Biology and Biotechnology at Stellenbosch University, and was awarded as the best third-year Microbiology student in South Africa. She completed her BScHons in Biotechnology at the University of the Free State and was awarded as the best UFS Biotechnology student in 2011. In 2013, she obtained her MSc Biochemistry at the UFS with distinction. She began her career as a structural biologist in her PhD year and is presently a postdoctoral fellow at the UFS, pursuing the structural characterisation of fungal monooxygenases.

With her thesis, ***NATURAL ROLES AND BIOCATALYTIC APPLICATIONS OF BAEYER-VILLIGER MONOOXYGENASES FROM ASPERGILLUS FLAVUS***, the candidate contributes to scholarship on flavoprotein monooxygenases, more particularly in Baeyer-Villiger monooxygenases (BVMOs). While BVMOs are widely studied in biocatalysis, this study investigates the native roles of BVMOs in their host organisms, particularly in aflatoxin biosynthesis by the filamentous fungus *A. flavus*. The isoforms of the BVMO MoxY, which catalyses a key reaction in aflatoxin biosynthesis, was characterised and the role of MoxY in aflatoxin biosynthesis was proved. The entire BVMOme was evaluated for their ability to complement the activity of MoxY intragenomically and four candidates were identified. Furthermore, MoxY was characterised as a biocatalyst which showed homotropic allosteric conversion of small surrogate ketones. The structure of BVMOAFL210 was solved using X-ray crystallography and the role of residue 513 in regioselectivity and sulfoxidation was investigated by mutagenesis.

Promoter: Prof DJ Opperman

Co-promoter: Prof MS Smit

DOCTOR OF PHILOSOPHY MAJORING IN CHEMISTRY

FERREIRA, Hendrik

Hendrik Ferreira was born on 26 July 1988 in Ladysmith, KwaZulu-Natal, and matriculated from Ladysmith High School in 2006. He has been a student at the University of the Free State from 2007 to 2019, obtaining his bachelor's, honours,



master's, and doctoral degrees in Chemistry from the institution. He is currently employed as support to project management within the clinical research field, focusing on early-phase clinical studies that assist in bringing medications and medical instrumentation to the market.

With his thesis, **DENSITY FUNCTIONAL THEORY CALCULATIONS AND ELECTROCHEMISTRY OF OCTAHEDRAL $M(L, L'-\text{BID})_3$ COMPLEXES, L AND $L' = N$ AND/OR O AND $M = \text{SELECTED TRANSITION METALS}$** , the candidate investigates the viability of Iron(II) and Cobalt(II) organometallic complexes with phenanthroline, bipyridine or terpyridine as coordinating ligands, as potential dyes or mediators for use in dye-sensitised solar cells. Various chemical, electrochemical, and density functional theory (DFT) calculated properties of these complexes are considered for use in solar cell research. The complexes investigated are shown to be viable options for use within solar-cell research and prove that DFT calculations may aid in decreasing research cost and time, as well as assisting in the synthesis of customised complexes with specific properties as required for specific applications in practice.

Promoter: Prof J Conradie

Co-promoter: Dr MM Conradie

RAMADAN, Ahmed Abdelatty Issa

Ahmed Ramadan was born in Kom Hamada, Egypt, on 3 December 1975. He received his secondary education at the Nasr School in Kom Hamada, where he matriculated in 1994. He obtained the BSc degree in 1998 at Cairo University, Egypt, and the MSc degree with distinction in 2015 at Qatar University in Doha, Qatar. He started his career as a Science teacher in Kom Hamada in 1998. In 2000, he was appointed as chemist in the Department of Chemistry, Cairo University. Currently he is a Senior Chemist at Qatar University, where he has been working since 2002.

With his thesis, **SILICA POLYMERIZATION KINETICS AND APPLICATION OF SILICA-BASED POLYMERS**, the candidate makes a contribution to the kinetics of alkoxysilanes and organoalkoxysilanes polymerisation through a sol-gel process and by using gas chromatography. With this contribution, he attempts to investigate the effects of different parameters such as the nature of the alkoxysilane, the water content, solvents, catalysts, and addition of salt on the polymerisation kinetics. The results of this investigation form a basis for finding solutions to manage the hydrolysis, condensation, and re-esterification processes of the alkoxysilanes, and to eventually control the final product in different industries. One of these final products is functionalised-magnetic solid phase extraction (MSPE), which is used to concentrate and analyse pesticides in environmental water samples.

Promoter: Prof AS Luyt

Co-promoters: Dr KA Al-Saad and Dr EHG Langner

DOCTOR OF PHILOSOPHY MAJORING IN CONSUMER SCIENCE

TINTA, Nokuthula

Nokuthula Tinta was born in Grahamstown on 10 September 1978, where she obtained her primary and secondary education. After matric she successfully obtained a higher diploma in Education in 2001, followed by a BAHons in Human Ecology in



2002, and the master's degree in Human Ecology in 2004 at the University of the Western Cape. She started her career as a fabric technologist in 2003, and in 2005 she was appointed as teacher at Edgemoed High School. In January 2013, she was appointed as a junior lecturer in the Department of Consumer Science at the University of Free State, a post she still holds.

With her thesis, ***EMPOWERMENT MODEL FOR PEOPLE WITH DISABILITIES PARTICIPATING IN INCOME GENERATING ACTIVITIES: A CASE OF A PROTECTIVE WORKSHOP IN BLOEMFONTEIN***, the candidate made a valuable contribution through exploring the experiences and perceptions of people with disabilities participating in income-generating activities. This case study revealed the barriers that hindered people with disabilities from effectively participating in income-generating activities. She concludes the study by developing an empowerment model for people with disabilities participating in income-generating activities in a protective workshop. The proposed model is set to improve the lives of people with disabilities participating in income-generating activities in a protective workshop, as well as assist instructors at the specific workshop, community based-organisations, curriculum developers, the donor funders, and the decision makers and policy makers dealing with people with disabilities.

Promoters: Prof HJH Steyn and Dr JF Vermaas

DOCTOR OF PHILOSOPHY MAJORING IN DISASTER MANAGEMENT

MLENGA, Daniel Hodges

Daniel Mlenga was born on 9 July 1977 in Blantyre, Malawi. He completed his BSc in Agriculture at the University of Malawi in 2001, MSc in Crop Production at the Africa University in Zimbabwe in 2007, and MBA at the Heriot-Watt University in Scotland in 2013. He started his career as field officer for an international NGO and gradually transformed into a dedicated humanitarian practitioner, which has led him to over 10 countries in Africa, Asia, and the Middle East, supporting food-security and livelihood initiatives. Currently he is stationed in Bangladesh, working with the Food and Agriculture Organisation of the United Nations.

With his thesis, ***INTEGRATED DROUGHT MONITORING FRAMEWORK FOR ESWATINI APPLYING THE STANDARDISED PRECIPITATION INDEX AND THE NORMALISED DIFFERENCE VEGETATION INDEX***, the candidate provided a new paradigm for drought-risk management through drought monitoring and early warning. Through the application of SPI and NDVI, the candidate contributes to systematic drought monitoring, enhanced stakeholder coordination, and timely provision of science-based early-warning drought information. Through the use of multi-dimensional data sources for this study, such as rainfall and remote sensing data, he proposes a practical framework that will help Eswatini and other African governments to (i) improve early detection of droughts, (ii) enhance drought early warning, (iii) provide information for preparedness, mitigation, and response, (iv) improve stakeholder coordination, (v) provide data for vulnerability mapping, and (vi) enhance evidence-based drought declarations and actions.

Promoter: Prof A Jordaan

Co-promoter: Prof HM Banda

DOCTOR OF PHILOSOPHY MAJORING IN GENETICS

VAN WYK, Anna Magrieta

Anri van Wyk was born in Pretoria on 5 September 1984. She matriculated in Pretoria at Montana High School in 2002. She obtained the following degrees at the Tshwane University of Technology: NDip Biotechnology (2008), BTech Biotechnology



(2010), and MTech Biotechnology cum laude (2014). She started her professional career in 2006 as intern at DNAbiotec, from there she volunteered at the National Zoological Gardens (NZG) of South Africa to gain more experience in the field of conservation genetics. She was later appointed as an intern/research assistant at the NZG, where she is currently appointed as a postdoctoral fellow.

With her thesis: ***HYBRIDIZATION AND THE EFFECT ON CONSERVATION: INVESTIGATING INTROGRESSION IN THREE ANTELOPE GENERA HIPPOTRAGUS, CONNOCHAETES AND DAMALISCUS***, the candidate made a significant contribution to conservation management. Extensive translocation of wildlife throughout South Africa is threatening the genetic integrity of several taxa, potentially leading to hybridisation. Identification based on morphological traits is difficult beyond the F1 generation, and molecular analysis is required to identify animals of mixed ancestry. A genotyping test based on microsatellite markers was developed for each genus. Individual assignment was then achieved with Bayesian models. Optimal threshold Q-values were determined for each species, at which most hybrids will be identified while conserving non-admixed individuals. Overall, results suggested low levels of introgression between the black and blue wildebeest, with higher levels in the other two genera. The study was conducted in close collaboration with conservation agencies, who will use the results to guide future management of hybridisation.

Promoters: Prof JP Grobler and Prof A Kotzé

Co-promoters: Prof D Dalton and Prof B Janse van Vuuren

DOCTOR OF PHILOSOPHY MAJORING IN GEOHYDROLOGY

ALLWRIGHT, Amy Jane

Amy Allwright was born in Port Elizabeth on 1 October 1988, where she matriculated at the Pearson High School in 2006. She obtained her undergraduate BSc degree from the Nelson Mandela University in 2010, her BScHons degree at the University of the Free State (UFS) with distinction in 2011, and her MSc degree at the UFS with distinction in 2013. She started her career as a numerical groundwater modeller in Bloemfontein in 2013. In 2015, she was officially appointed at the Institute for Groundwater Studies, UFS, and currently holds a lecturer position.

With her thesis, ***DEVELOPMENT OF A FRACTAL ADVECTION-DISPERSION EQUATION AND NEW NUMERICAL SCHEMES FOR THE CLASSICAL, FRACTAL AND FRACTIONAL ADVECTION-DISPERSION TRANSPORT EQUATIONS***, the candidate contributes to groundwater contaminant simulation to improve the modelling of anomalous diffusion. With this contribution, she advanced the simulation of groundwater transport by introducing new derivatives and numerical solutions for the governing advection-dispersion equation. Improved numerical approximation schemes for the classical advection-dispersion equation were developed, fractal and fractional derivatives were incorporated into the formulation, and fractional and fractal derivatives were combined. The research validated the use of fractional and fractal derivatives, progressed the collective mission of resolving the difference between modelled and observed, and the tools developed can be applied to improve the comprehension and management of natural systems.

Promoter: Prof A Atangana



DOCTOR OF PHILOSOPHY MAJORING IN MATHEMATICAL STATISTICS

KOTELO, Taoana Thomas

Taoana Thomas Kotelo was born on 17 January 1973 in Maseru, Lesotho. He matriculated at Machabeng College in June 2006, obtained the BSc degree from the University of the Free State in 2002, BScHons from the University of the Free State in 2004, and the MSc (Mathematical Statistics) degree at the University of the Free State in 2005.

With his thesis, **MIXTURE FAILURE RATE MODELLING WITH APPLICATIONS**, the candidate makes a contribution to the distribution theory and its applications to reliability and demography. He develops a novel approach to statistical description of heterogeneous populations. It is well known that the real-life populations of various objects are heterogeneous in nature and the assumption of homogeneity, which is often made in the literature for simplicity, can result in substantial errors in obtaining the estimates for relevant indices. With this contribution, the candidate significantly improves the previously reported approaches to modelling of the failure rate, the reversed failure rate, the mean inactivity time, and other indices and characterisations of lifetime distributions in heterogeneous set-up. Moreover, in this thesis, he establishes a background for further development in a number of directions. Although most of the results were obtained in the univariate framework, possible generalisations to the multivariate description are already clearly seen.

Promoter: Prof M Finkelstein

MARIBE, Gaonyalelwe

Gaonyalelwe Maribe was born on 15 April 1990 in Thaba Nchu, a small town east of Bloemfontein. He matriculated from Unicom High School, Tweespruit, in 2007. He completed his degree in Investment Science at the University of Free State in 2013. In 2014 and 2015 respectively, he enrolled for honours and master's degrees, specialising in Mathematical Statistics. Both degrees were completed with distinction. The candidate enrolled for a PhD in Mathematical Statistics in 2016. In 2017, he was a visiting scholar at the Catholic University of Leuven in Belgium. He is currently a lecturer in Mathematical Statistics at the University of Pretoria.

With his thesis, **FLEXIBLE UNIVARIATE EXTREME VALUE MODELLING WITH APPLICATIONS IN INSURANCE**, the candidate contributed to the area of extreme value theory, specifically in second-order bias reduced tail estimation. The candidate exploited the mathematical fact that the bias of the Hill estimator tends to zero as the threshold increases. Estimation of the extreme value index was considered through a penalised likelihood and Bayesian implementation of the extended Pareto distribution. The candidate considered tail estimation for randomly censored data from a heavy tailed distribution and proposed a bias reduced approximation of the extreme value index, and a bootstrap algorithm to construct confidence intervals. The candidate proposed a novel, flexible bias-reduced tail fitting technique for all max-domains of attraction, improving upon the classical generalised Pareto approximation by considering a semiparametric generalised Pareto modelling technique to model the second order component. This research has led to two published papers in international peer-reviewed journals and one manuscript submitted for review.

Promoter: Dr A Verster

Co-promoter: Prof J Beirlant



DOCTOR OF PHILOSOPHY MAJORING IN MICROBIOLOGY

DITHEBE, Khumisho

Khumisho Dithebe was born on 2 February 1988 in Bloemfontein. He matriculated at Tsoseletso High School and later obtained a BSc degree at the University of the Free State in 2009. He continued his studies at the UFS and obtained his BScHons in Microbiology in 2011, followed by an MSc in Microbiology, obtained cum laude, in 2013. His MSc results earned him the Andries Brink-Sasol prize for best MSc dissertation in Microbiology and the JP van der Walt prize for best MSc dissertation in Yeast Science.

With his thesis, **CHARACTERIZATION OF INTRACELLULAR GAS BUBBLES IN SACCHAROMYCES**, the candidate makes a contribution to understanding the influence of intracellular gas bubble formation on cell function in yeasts during fermentation and respiration. He made use of benchtop bioreactors for continuous cultivation of yeast cells to study the effects of intracellular gas bubbles on metabolic activity, membrane permeability, flocculation, and cell buoyant density. The results of the study indicate that the effects of intracellular gas bubbles on cell function may be strain dependent. Given that the bubbles contain CO₂, these findings should be considered when optimising fermentation parameters, as back pressure from fermentation vessels may exacerbate their effects on cell physiology and function. Results obtained in this study were presented at international and local conferences.

Promoter: Prof CH Pohl-Albertyn

Co-promoters: Prof PWJ van Wyk and Mrs L Steyn

DOCTOR OF PHILOSOPHY MAJORING IN PHYSICS

MISHRA, Prashant

Prashant Mishra earned his bachelor's degree from the University of Delhi in 2012 and completed his MSc at NIILM University in 2014. He did his PhD on the nano-engineered bioelectronic interfaces to produce high-throughput bioelectrodes with the applications in biocatalysis and bioenergy devices. His study was mainly focused on the advanced nanobioelectronics for high-throughput bio-energy devices and interfacing electrocatalytic nanomaterials for bioelectronics. His study was mainly focused on the research and development of enzymatic biofuel cells using advanced bioelectronic interfaces, with the emphasis on the nanoscale engineering of bioelectrode materials. The work was done in collaboration with Linköping University, Sweden.

With his thesis, **NANO-ENGINEERED BIOELECTRONIC INTERFACES TO PRODUCE HIGH-THROUGHPUT BIOELECTRODES FOR APPLICATIONS IN BIOCATALYSIS AND BIOENERGY DEVICES**, the candidate makes a contribution to research on the advanced nanobioelectronics for the high-throughput bio-energy devices and interfacing electrocatalytic nanomaterials for bioelectronics. To develop a new-generation biofuel cells that could enhance the biocompatible microenvironments for trapping biomolecules and the enhancement of electron transfer kinetics, intensive efforts have recently been devoted to new design, structural engineering, and smart architecture of nanostructured bioelectronic interfaces for the electrode materials. In this study, he mainly focused on the research and development of enzymatic biofuel cells using advanced bioelectronic interfaces, with the emphasis on the nanoscale engineering of bioelectrode materials.

Promoter: Prof A Tiwari

Co-promoter: Prof HC Swart



MISHRA, Sachin

Sachin Mishra earned his bachelor's degree from the Chaudhary Charan Singh (CCS) University in 2012 and completed his MSc at Sharda University in 2014. He did his PhD on the biosensors and bioelectronics interfaces depending on the triggered control tunability, switchability, on/off- electrobiocatalysis towards programmable bioelectronic devices, including the design of novel compartmentalised bioreactors, biofuel cells with inbuilt self-control features. The work was done in collaboration with the Linköping University, Sweden.

With his thesis, **ON/OFF-SWITCHABLE BIO-INTERFACES FOR TRIGGERED BIOELECTRONICS**, the candidate makes a contribution to switchable bioelectronics, focusing on the Graphene interfaces with multi-stimuli responsiveness areas, which is of particular interest due to their diverse super-thin interfacial behaviour. With his contribution, he designed dynamic enzyme electronics via the fabrication of stimuli-encoded zipper-like composites, so that the smart bioelectrodes switch upon triggering. A reversible on/off-switching of bio-electrocatalysis was observed in this system. The zipper-like interfacial bioelectrochemical properties were also tuned over a modest change in the physical properties. The results of this investigation serve as an indication of the value this type of intervention holds for the attempt to find a solution to operate complex physiological systems in a single miniaturised domain.

Promoter: Prof A Tiwari

Co-promoter: Prof HC Swart

OCAYA, Richard Opio

Richard Opio Ocaya was born in Uganda on 31 August 1970. He attained his Cambridge O' Level Certificate from Munali Secondary School in Zambia, a bachelor's degree in Mathematical Physics in 1989, and a master's degree in Physics from the University of Botswana in 1995. He is a member of the Institute of Electrical and Electronics Engineers (IEEE) and the Institute of Informatics and Systemics (IIS). He holds a patent in telemetry and has authored a book and several articles. He contributes regular freelance articles to *Electronics Design News* in the United States and maintains a YouTube channel that hosts advanced electronics projects under the name 'Electro'.

With his thesis, **TOOLKIT-BASED FRAMEWORK FOR SCALABLE HIGH PERFORMANCE STANDALONE MOLECULAR DYNAMICS SIMULATIONS**, the candidate makes a significant contribution to computational physics. He developed an open-source molecular dynamics simulation package, using the Sutton-Chen potential for FCC structure. The freely available software runs on various architectures and is highly scalable with respect to processor configurations. With the software, the candidate generated an impulse at the surface of a nanocrystal and then follow the subsequent bond-length oscillations. He proves that this method effectively models phonons propagation through FCC nanocrystal. This work improves our understanding of heat propagation in nanocrystal. The main outputs have been published in six accredited journals and a book chapter.

Promoter: Prof JJ Terblans



OOSTHUIZEN, Dina Naudé

Dina Naudé Oosthuizen was born in Senekal on 28 October 1989. She received her secondary education in Bloemfontein, where she matriculated at Oranje Meisieskool in 2007. She obtained the degree BSc Physics and Management in 2011, BScHons in Chemistry in 2012, and the degree MSc (Chemistry) with distinction in 2016 at the University of the Free State. She started her career in 2016 as a researcher in Pretoria at the CSIR, where she held a PhD scholarship.

With her thesis, ***GAS SENSING FABRICATION OF HIGHLY SENSITIVE AND SELECTIVE NO₂ AND CO ROOM TEMPERATURE GAS SENSING PROPERTIES OF CuO, CeO₂ AND CeO₂-CuO HETEROSTRUCTURES***, the candidate contributes to scholarship on nanostructured materials, focusing on the gas-sensing properties of metal oxide-based gas sensors. With this contribution, she attempts to study the properties of CuO, CeO₂, and CeO₂-CuO heterostructures in the presence of different NO₂ and CO atmospheres at low operating temperatures, while investigating the gas-sensing mechanism of p- and n-type semiconductors. The highly selective and sensitive performance of these nanomaterials to CO and NO₂ gases at room temperature contributes to finding a solution to effectively detect and monitor toxic levels of NO₂ and CO in both domestic and industrial areas, including indoor and outdoor air quality.

Promoter: Prof D Motoung

Co-promoter: Prof HC Swart

DOCTOR OF PHILOSOPHY MAJORING IN PLANT PATHOLOGY

CHUNG, Hung-Yu

Hung-Yu Chung was born in Taiwan on 2 October 1984. He moved permanently to South Africa in 1992 and became a South African citizen. He matriculated at Grey College High School, Free State, in 2003. He graduated with a BSc majoring in Plant Health in 2007 and a BScHons in Plant Health in 2008 at the University of the Free State. He obtained an MSc in Plant Pathology in 2012 at the University of the Free State.

With his thesis, ***THE INFLUENCE OF SORGHUM PHYSIOLOGY ON RHIZOSPHERE INTERACTIONS AND THEIR EFFECT ON ROOT DISEASE***, the candidate provides insight into allelopathic interactions of sorghum with soil, pathogenic fungi, and the rhizosphere microbiome as a whole. He demonstrated considerable variation among 22 sorghum genotypes in terms of the production of the allelochemical sorgoleone and proved that it significantly limited the in-vitro growth of important soil-borne pathogens of sorghum. In microcosm trials, four phenolic extracts and sorgoleone inhibited three important soil-borne pathogens, resulting in significant improvements in leaf and root length and a reduction in root rot. This study will significantly improve our understanding of plant root extracts and their effects on soil microbial populations.

Promoter: Prof WJ Swart

Co-promoter: Prof N McLaren



VAN ROOYEN, Danelle

Danelle van Rooyen was born in Bloemfontein on 14 June 1985. She received her secondary education in Bloemfontein at Sand du Plessis High School, where she matriculated in 2003. She obtained her BSc (Plant Health) in 2006, BScHons (Plant Health) in 2007, and MSc (Plant Pathology) in 2011 at the University of the Free State. Subsequent to completing her studies, she has taken up an appointment as Quality Assurance Auditor at FARMOVS.

With her thesis, ***RELATIONSHIP BETWEEN SORGHUM PLANT AND GRAIN CHARACTERISTICS, COLONISATION BY MYCOTOXIGENIC FUSARIUM SPP. AND MYCOTOXIN LEVELS***, the candidate emphasised the importance of a multi-variable and multi-environment approach to the evaluation of grain mould resistance in sorghum genotypes. The study included the quantification of the *Fusarium graminearum* species complex (FGSC) and the subsequent health risk of mycotoxins to grain end-users. Variation in responses of lines that represent the range of grain and plant characteristics in sorghum bicolor under different environmental conditions, was quantified in relation to morphological, physiological, and agronomic adaptations in the tested genotypes. These included the production of plant defence metabolites when the host is challenged by FGSC. Cultural control methods such as legume-rotation systems and fungicide applications also contributed to grain mould resistance by enhancing general plant health. The study contributes to improved grain quality and reduced risk of mycotoxins in sorghum production systems.

Promoter: Prof N McLaren

Co-promoter: Dr GJ Marais



The Main Procession graduation gowns – embroidered with rich diversity

South Africa, and the Free State in particular, has a long-standing friendship with our neighbouring country, Lesotho.

Through a shared history, we have become co-creators of our futures. For this reason, the UFS decided to incorporate our tradition with that of the Basotho in the design of our Main Procession graduation gowns.

The gowns are inspired by the Seanamarena – the traditional Basotho blanket. The different patterns on the Seanamarena indicate the status one holds in the Basotho nation or reflect the occasion being celebrated. Keeping the Seanamarena pattern in mind, we combined our traditional academic designs with that of the Basotho nation.

YOKE PATTERNS

Yoke pattern for the Chancellor and Vice-Chancellor

This Seanamarena pattern is an interpretation of a design – used exclusively for the king and chiefs – which means “to swear by the king”. This blanket has the highest status of all Basotho blankets.



Yoke pattern for the Chairperson of the Council

This Seanamarena Victorian crest motif appeared after the visit of the Prince of Wales to Lesotho in 1925, which made a profound impression on the local people. Customers refer to this blanket as ‘lesiba’ – meaning feathers – when buying it.



Yoke pattern for the Vice-Rector

This Seanamarena Poone design symbolises good crops, wealth, and fertility. The Poone is given as a present to honour an important visitor.



Yoke pattern for Registrar

The same Seanamarena Poone design used for the Vice-Rector applies to the Registrar, with some slight design and colour alterations.

The Deans wear gowns made in the colours of the faculties or others which indicate the office they hold.





CONGRATULATIONS FROM THE ALUMNI OFFICE

Warmest congratulations on your graduation and best wishes for your next adventure! We are very proud of you. We hope that you will stay in touch with your Alma Mater and share your future achievements with other Kovsie alumni.

CELEBRATE EXCELLENCE

Alumni are a real measure of a university's brand and we strive to keep you informed of the crop of exceptional young leaders and pioneers emerging from Kovies. We do this through our online platforms, social media, publications like BULT and events such as the Chancellor's Distinguished Alumni Awards.

GROW THE COMMUNITY

We exist not only to keep you, our most valued brand ambassadors, connected to your alma mater but to help you stay connected to each other. We encourage engagement and networking opportunities through events, informal visits and guest lectures. You can connect with alumni globally and reconnect with former class mates through the Alumni Office.

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The extraordinary achievements of Kovies, both current and past, have placed the University of the Free State on the world stage.

Read about some of those achievements at: www.ufs.ac.za/alumni/noteworthy-alumni. These alumni have gone on to inspire the next generation of Kovies and their communities.

GIVE BACK

The UFS values your financial contributions, your time and your skills. Strengthen your bond with your Alma Mater by becoming involved in projects, events and initiatives aimed at creating a fulfilling student and alumni experience for fellow Kovies.

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