VISION130
Renew and Reimagine towards 2034
EXCELLENCE

GRADUATION CEREMONY

BLOEMFONTEIN CAMPUS

FRIDAY 21 APRIL 2023
08:30

VISION130
Renew and Reimagine towards 2034

Faculty of Natural and Agricultural Sciences

Bachelor's degrees honours degrees, master's degrees, and doctoral degrees

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

PROGRAMME

21 APRIL 2023 | 08:30
BLOEMFONTEIN CAMPUS

CONSTITUTION OF THE CONGREGATION

OFFICIAL WELCOME

MUSICAL ITEM

PRESENTATION OF CANDIDATES

CONGRATULATORY MESSAGE

NATIONAL ANTHEM OF SOUTH AFRICA

DISSOLUTION OF THE CONGREGATION

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.

By attending the graduation ceremony, you agree that the UFS may use photographs taken by the official photographer in which you appear for marketing purposes.

By attending the graduation ceremony, you agree that the UFS may use video footage taken by the official videographer in which you appear for marketing purposes.

Nkosi sikelel' iAfrika

NATIONAL ANTHEM OF SOUTH AFRICA

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:

- 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
- Please do not leave the hall before the graduation proceedings have been concluded
- Family and friends who are unable to attend may watch the full graduation ceremonies through our livestream link at https://livestream.ufs.ac.za.

Inspiring excellence, transforming lives through quality, impact, and care.

ABOUT THE UFS

BLOEMFONTEIN CAMPUS

QWAQWA CAMPUS

SOUTH CAMPUS

The University of the Free State (UFS) has a proud history as one of the oldest institutions of higher education in South Africa. It opened its doors in Bloemfontein in 1904 as the Grey University College, with six students in the Humanities. Today it is a multi-campus institution, with two diverse campuses in Bloemfontein and one in Qwaqwa in the scenic Eastern Free State, accommodating more than 40 000 students in its seven faculties (Economic and Management Sciences, Education, Health Sciences, the Humanities, Law, Natural and Agricultural Sciences, Theology and Religion), with an increasing number of international students and associates, and an ever-widening scope of active involvement in and contribution to its surrounding communities.

For the past 119 years, the UFS has been delivering quality graduates who have made their mark in various sectors. What sets the institution apart is its holistic student support initiatives, enabling it to achieve some of the highest success rates in the country. Delivering students who are in high demand in the global job market remains a top priority. An established network of industry partners and close collaboration with the public and private sectors, as well as a continuous process of transformation and curriculum renewal, dovetail to produce highly employable graduates.

UFS research efforts are driven by dedicated scholars, some of whom are international leaders in their fields, with industry and social impact and real-world application.

Through the principle of engaged scholarship, the UFS responds to societal needs by using its scholarly and professional expertise with an intentional public purpose and benefit.

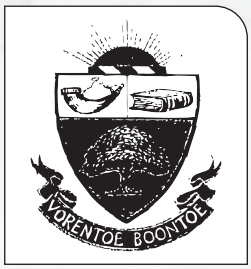
The UFS is an institution that goes all out to provide its students and staff with an outstanding university experience. Everything the institution does is rooted in its values of excellence, innovation and impact, accountability, care, social justice, and sustainability.

The UFS aspires to be 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. Our Vision 130 is an elaboration of our strategic intent to reposition the university for 2034, when we will commemorate our 130th anniversary.

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.

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 Zaaiman – 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 Cillié – DPhil (h.c.)
SPD le Roux – DLitt (h.c.)
A Polson – DPhilMed (h.c.)
J du P Scholtz – DPhil (h.c.)
1986 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 Ramphele – 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 Loock – 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.)
2021 ZM Yacoob – LLD (h.c.)
SM Pityana – DPhil (h.c.)
RJ van Niekerk – DLitt (h.c.)
2022 WK Byanyima – PhD (h.c.)
DM Davis – LLD (h.c.)
DE Moseneke – LLD (h.c.)
AL Sachs – LLD (h.c.)
MJ Wingfield – DSc (h.c.)
2023 M Musk – PhD (h.c.)
A Ekwamu – DSc (h.c.)
D Pepler – PhD (h.c.)
PCJ Vale – PhD (h.c.)

Shields of Honour, Council and Chancellor's Medals

1994 Prof FO Müller (Shield of Honour)
RE Schoombie (Shield of Honour)
1995 Prof FO Müller (Chancellor's Medal)
RE Schoombie (Chancellor's Medal)
1996 Prof S Mittman (Shield of Honour)
1997 Prof M Jansens (Shield of Honour)
1998 Prof CJC Nel (Chancellor's Medal)
Prof C Swanepoel (Chancellor's Medal)
1999 WJ (Hansie) Cronje (Shield of Honour)
Prof David Justice (Shield of Honour)
2000 Prof P Rosseel (Shield of Honour)
Prof MJ Viljoen (Chancellor's Medal)
2001 Prof PC Potgieter (Chancellor's Medal)
2002 T Moss (Shield of Honour)
Prof CD Roode (Chancellor's Medal)
2003 Prof HC Janse van Rensburg (Council Medal)
Prof SA Petersen (Shield of Honour)
2008 Ludo Helsen (Shield of Honour)
2009 Prof JU Grobbelaar (Council Medal)
2010 Mrs AM Dippenaar (Chancellor's Medal)
2014 Dr H Verster (Chancellor's Medal)
2014 Mr JL Pretorius (Chancellor's Medal)
2016 Mr AD Osler (Chancellor's Medal)
Ms M van der Merwe (Chancellor's Medal)
2017 Ms JS Isaacs (Chancellor's Medal)
2019 Mr JF de Villiers (Chancellor's Medal)
Ms EM Oosthuizen (Council Medal)
2022 Dr N Pearce (Chancellor's Medal)
Mr N Janse van Rensburg (Council Medal)
2023 Prof SC Brown (Council Medal)

MESSAGE FROM THE RECTOR AND VICE-CHANCELLOR | PROF FW PETERSEN

Welcome to the graduation ceremony of the University of the Free State (UFS).

Today is a special day indeed. Few events and occasions hold as much significance as your graduation. This day is just as important for those who have supported you along the way. Many of you had to overcome a lot during your journey to get here today. Many of you are the first in your families to reach this milestone. You have earned this moment and you should be extremely proud. Always acknowledge and recognise the significance of your achievements as you transition from being a University of the Free State (UFS) student to a UFS graduate.

Graduands, you have had the honour of studying at an institution that commands a track record that is on par with well-regarded national peers, as reflected in the 2023 Times Higher Education World University and Impact Rankings. Sufficient evidence indicates that higher education has the potential to function as an agent of change and a means of serving the greater good. Although the mission of our university has always been to equip you with knowledge and skills needed to make a difference in your field of study, we are also mindful that values are as important for you to make a difference in your communities.

The UFS places great emphasis on ensuring that students and staff have an outstanding university experience. In our pursuit of excellence, we are proud that our environment is conducive for intellect and knowledge to flourish. As such, our values of excellence, innovation and impact, accountability, care, social justice, and sustainability are embedded in all activities across the institution.

Graduands, irrespective of what you undertake in the future, remember to pursue your passion, and continuously have the desire to make a difference in the lives of others. Surround yourself with real people in real communities, while inculcating kindness, empathy, passion, and awareness of the real issues. If you want to tackle the unfinished goals of this country and create a better world – build bridges, remain morally astute, and grow your coalitions. Life can be challenging if you are on your own – however, great results can be achieved if you work as a collective.

It is up to you to align yourself with those who have a common cause, heal the divisions that keep us separated, and carry along those who have been left out and are struggling.

Congratulations to all our graduands. May you have continued success in all your endeavours!

Welkom by die Universiteit van die Vrystaat se gradeplegtigheid.

Vandag is voorwaar 'n spesiale dag. Min gebeurtenisse en geleenthede het soveel betekenis as 'n mens se gradeplegtigheid. Hierdie dag is net so belangrik vir diegene wat julle langs die pad ondersteun het. Baie van julle moes talle uitdagings te bowe kom tydens julle reis om vandag hier te wees. Baie van julle is die eerste in julle gesinne om hierdie mylpaal te bereik. Julle het hierdie oomblik verdien en julle kan baie trots wees daarop.

Erken en herken altyd die belangrikheid van jou prestasie waar jy van 'n student van die Universiteit van die Vrystaat (UV) beweeg na 'n UV-gegradueerde.

Gegradueerdes, julle het die eer gehad om aan 'n instelling te studeer wat 'n prestasierekord het wat gelykstaande is aan welbekende nasionale eweknieë, soos weerspieël in die 2023 Times Higher Education World University en Impact-ranglys. Talle bewyse dui daarop dat hoër onderwys die potensiaal het om te dien. Alhoewel die missie van ons universiteit nog altyd was om julle toe te rus met kennis en vaardighede wat nodig is om 'n verskil in julle studieveld te maak, is ons ook bedag daarop dat waardes vir julle net so belangrik is om 'n verskil in julle gemeenskappe te maak.

Die UV plaas groot klem daarop om te verseker dat studente en personeel 'n voortreflike universiteitservaring het. In ons strewe na uitnemendheid is ons trots dat ons omgewing bevorderlik is vir intellek en kennis om te floreer. As sodanig is ons waardes van uitnemendheid, innovasie en impak, aanspreeklikheid, omgee, sosiale geregtigheid en volhoubaarheid ingebed in alle aktiwiteite oor die instelling heen.

Gegradueerdes, ongeag wat julle in die toekoms aanpak, onthou om julle passie na te streef en behou die begeerte om vootdurend 'n verskil in ander se lewens te maak. Omring julself met regte mense in regte gemeenskappe, terwyl julle welwillendheid, empatie, passie en bewustheid van werklike kwessies inskerp. As julle die onvoltooide doelwitte van hierdie land wil aanpak en 'n beter wêreld wil skep – bou brûe, bly moreel skerpsinnig, en laat julle koalisies groei. Die

lewe kan uitdagend wees as 'n mens op jou eie is – goeie resultate kan egter behaal word as julle as 'n groep saamwerk.

Dit is julle verantwoordelikheid om julself in ooreenstemming te bring met diegene wat 'n gemeenskaplike saak het, die verdeeldheid te genees wat ons verdeeld hou, en om diegene wat uitgelaat is en sukkel, met julle saam te neem.

Baie geluk aan al ons graduandi. Mag julle voortgesette sukses in al julle ondernemings behaal!

Re a le amohela moketeng wa kabo ya dikgau wa University of the Free State (UFS).

Letsatsi lena ke le kgethehileng ka nnete. Ke diketsahalo tse mmalwa haholo tse bohlokwa jwalo ka ho abelwa kgau ya yunivesithi. Letsatsi lena le bohlokwa hape le ho batho ba ileng ba le tshehetsa leetong la lona. Ba bangata ba lona le ile la hlola maima a mangata leetong la lona ho fihla mona kajeno. Ba bangata ba lona ke lona ba pele malapeng a lona ho fihlella sehlohlolo sena sa katleho. Le fihlile motsotsong ona mme re motlotlo ka lona haholo.

Ka dinako tsohle amohelang le ho lemoha bohlokwa ba dintlha tseo le di fihleletseng ha jwale le tloha boemong ba ho ba moithuti mona University of the Free State (UFS) ho fetela boemong ba ho ba graduate ya UFS.

Baithuti ba seng ba tla abelwa dikgau tsa yunivesithi, le bile le tlotla ya ho ithuta setheong sa thuto se nang le nalane e ntle e kgemang le bomphato ba yona ba hlomphehang naheng, jwalo ka ha ho boletswe ho 2023 Times Higher Education World University and Impact Rankings. Ho na le bopaki bo hlwellanang hodimo bo bontshang hore thuto e phahameng e na le monyetla wa ho sebetsa jwalo ka kofuto e hlahisang phetoho le mokgwa o hlahisang melemo e meholo ka ho fetisisa. Le hoja mishini ya yunivesithi ya rona ka dinako tsohle e bile ho le hlomella ka tsebo le bokgoni bo hlokahalang ho etsa phetoho dithutong, re boela re lemoha hore dintho tsa boleng di bohlokwa ho etsa phapang metseng ya lona.

UFS e kgothaletsa haholo ho etsa bonnete ba hore baithuti le moifo ba na le boiphihlelo bo hlaheletseng ka mahetla ba yunivesithi. Maikemisetsong a rona a ho hahamalla diphihlello tse ipabolang, re motlotlo hore tikoloho ya rona ke e loketseng bakeng sa fana ka bohlale le tsebo ho atleha. Ka lebaka lena, makgabane a rona bakeng sa diphihlello tse ipabolang, mehopolo e metjha le tshusumetso e ntle, boikarabelo, tlhokomelo, le toka e se nang leeme setjhabeng, le ho tswella ke dintho tse bopeletsweng mesebetsing yohle ya setheo sena sa thuto.

Baithuti ba seng ba tla abelwa dikgau tsa yunivesithi, ho sa natswe hore na le tla etsa eng nakong e tlang, hopolang ho phehella ditabatabelo tsa lona ka tjheseho, mme le tswele pele ho ba le takatso ya ho etsa phapang bophelong ba batho ba bang. Etsang hore le dikadiketswe ke batho ba sebele metseng ya sebele, ha le ntse le ruta le ho jala mosa, kutlwelobohloko, tjantjello, le temoho ya ditaba tsa sebele. Haeba le batla ho sebetsana le dipakane tse sa qetwang le ho theha lefatshe le betere – hahang marogo, dulang le le bohlale, le ho theha maqhama a lona a ditshebedisano. Bophelo e ka ba bo phephetsang haeba o sebetsa o le mong – le ha ho le jwalo, diphetho tse babatsehang di ka fihlellwa ka tshebedisano le ho ba ngatana-nngwe.

Dintho di mahetleng a lona ho iphaphatha le batho ba nang le dipheo tse tshwanang, ho kwala dikgeo tse re arohanyang, le ho jara batho ba ileng ba siuwa mora le ba nang le mathata a ba sitisang.

Re thoholetsa baithuti kaofela ba rona ba seng ba tla abelwa dikgau tsa bona tsa yunivesithi. E se ka le ka ba le katleho e tswelang pele mekutung ya rona kaofela!

VISION 130

Renew and Reimagine towards 2034

The University of the Free State (UFS) aims to continue growing and extending its influence and impact locally, regionally, and globally. Vision 130 is an elaboration of our strategic intent to reposition the institution for 2034, when the university will commemorate its 130th anniversary. It reflects our ambition to be a university with a consistent outward focus, and to be profound in what we deliver – building on past achievements, while constantly transforming ourselves in order to stay relevant within the dynamic and ever-changing international higher education sphere.

VISION

The UFS aspires to be 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.

MISSION

The university's ultimate goal is to impart and generate new knowledge that impactfully supports societal development.

VALUES

The UFS subscribes to a set of values, explicated below, which shape and inform our culture and provide a framework for our actions and decisions.

Our values are realised through the conduct of the wider university community:

excellence, innovation and impact, accountability, care, social justice, and sustainability.

OFFICE-BEARERS

CHANCELLOR
Prof BF Mohale
Professor of Practice (JBS)

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

CHAIR OF COUNCIL
Mr D Noko
HND Mechanical Engineering (UJ)

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

VICE-RECTOR: INSTITUTIONAL CHANGE, STRATEGIC PARTNERSHIPS, AND SOCIETAL IMPACT
Dr M Qhobela
PhD (KSU)

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

EXECUTIVE DIRECTOR: STUDENT AFFAIRS
Mr T Hlasho
MPhil (NMU)

REGISTRAR:
Mr NN Ntsababa
MPA (NMU)

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

PRESIDENT OF CONVOCATION
Dr PD du Toit
PhD (UFS)

PRESIDENT: INSTITUTIONAL STUDENT REPRESENTATIVE COUNCIL
Ledile Tshepang Bambo

DEANS

DEAN:
ECONOMIC AND MANAGEMENT SCIENCES

Prof P Burger
PhD in Economics (UFS)

DEAN:
EDUCATION

Prof LC Jita
PhD (MSU)

DEAN:
HEALTH SCIENCES

Prof GJ van Zyl
PhD (UFS)

DEAN:
THE HUMANITIES

Prof MA Masoga
PhD in Philosophy (UFS)

DEAN:
LAW

Prof SD Kamga
LLD (UP)

DEAN:
NATURAL AND AGRICULTURAL SCIENCES

Prof PD Vermeulen
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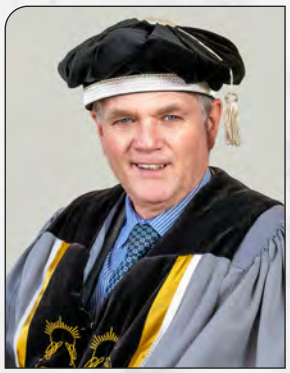

ACTING DEAN:
THEOLOGY AND RELIGION

Prof F Tolmie
PhD, DTh (UFS)

HONORARY DOCTORATE AND GUEST SPEAKER

MR DAVID PEPLER

Dave Pepler is a distinguished ecologist and naturalist. He was born in Robertson in 1950, where he attended primary and high school, and thereafter went on to study for a Diploma in Forestry at Saasveld Forestry College. He briefly worked as a forester in Zululand and Wolseley in the Western Cape. In 1994, he joined Stellenbosch University as a technical assistant in the Department of Nature Conservation, where he became Senior Lecturer until his resignation in 2000. Having completed an MPhil in Zoology at the University of Cambridge, he pursued a career in consulting, the presentation of natural history television documentaries, and writing. He remained at Stellenbosch University as an independent lecturer until 2022.

Pepler has conducted long-term studies on several species. The body of his work includes the peregrine falcon, *Falco peregrinus*; the booted eagle, *Hieraaetus pennatus*; and intensive research on the endangered lesser kestrel, *Falco naumanni*, a migratory species from the Palearctic region. He has published numerous peer-reviewed articles on topics such as diseases of small raptors, invasive mammals, dryland forestry, and problem animal control. He has also contributed chapters to academic literature, featuring most recently in *Ecology and Morality* as well as in *Violence against Nature*. He is a Research Associate at the DST Centre of Excellence for Invasion Biology (CIB) in Stellenbosch.

He has consulted various countries, including Chile, Southern Sudan, Namibia, Tanzania, Malawi, Zambia, Angola, and Eswatini. As a specialist tour guide, he has conducted expeditions to Iceland, Borneo, India, Ethiopia, Egypt, Morocco, Uganda, Rwanda, and Madagascar.

Throughout his career, Pepler has received numerous awards and honours, including the Harry Crossley Scholarship, Ernest Oppenheimer Memorial Trust Scholarship, Molteno Medal from the Cape Tercentenary Foundation, Stevenson Hamilton Award from the Zoological Society, the South African Habitat Council Life Achievement award, Order of the Bateleur from the SA Hunters Association, and an Honorary award from e'Bosch, the Stellenbosch Heritage Project.

Pepler is a humanist and practitioner and devotee of the principles of Zen Buddhism and the Stoic philosophers. An unfettered and impassioned love of books has made him a reckless reader, embedded with a deep love for the characters of the Bloomsbury Group, geopolitics, brutalist architecture, and the lives of the great explorers.

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COERTZEN, Azil

KHOSA, Bradly

LETSIE, Makhabane

MATHANGANA, Sanelisiwe Patience

MOKOENA, Mafusi Vinolia

MOUKANGWE, Lebogang

NTSHANGASE, Nolwazi Felicia

OLIVIER, Caitlin Helena*

VAN BAALEN, Casey Frederick

BACHELOR OF SCIENCE HONOURS MAJORING IN PHYSICS

NCHE, Pule Daniel

PETRUS, Themba

PIETERSE, Narushka Shonice

RADEBE, Ponaki John

RAMOLISE, Lesole Andrease

BACHELOR OF SCIENCE HONOURS MAJORING IN PLANT BREEDING

CILLIÉ, Charl Daniel

BACHELOR OF SCIENCE HONOURS MAJORING IN PLANT PATHOLOGY

HLONGWA, Sanelisiwe Ignatia

BACHELOR OF SCIENCE HONOURS MAJORING IN RISK ANALYSIS

KHOHLAKALA, Themba

KHOSA, Ripfumelo Eurenda

KOSIE, Dempho Lerato

MAPHALLA, Retsebile Maruruele

MASEKO, Ndadlana Piet*

MASENA, Thabiso Ernest

MLONYENI, Khayalethu*

MOKHOABANE, Moroke

Alexander
NDOU, Mulalo*
NETSHIOZWI, Unarine
RAMBOROSA, Nivasha*
RAMOLIKI, Refiloe
SEKETE, Kagiso
SIBEKO, Sipho Elijah
SINGH, Sajel*
TSIMANE, Tebogo*
ZUMANE, Vuyo

BACHELOR OF SCIENCE HONOURS MAJORING IN ZOOLOGY

VILJOEN, Johanco

MASTER'S DEGREES

MASTER OF SCIENCE

MOLETSANE, Moletsane*

MASTER OF SCIENCE IN NANOSCIENCE

JACOBS, Carla*
MIYA, Lindobuhle Alfred
MZINJANI, Viwe

MASTER OF SCIENCE MAJORING IN AGRICULTURAL ECONOMICS

BEZUIDENHOUT, Johannes Jacobus*

Dissertation Title: AN ECONOMIC ANALYSIS OF VOLUMETRIC AND AREA BASED WATER TARIFF CHARGES IN VANDERKLOOF

Supervisor: Prof B Grové

Co-Supervisor: Prof N Matthews

EYONG-MANYO, Blessing Manyi Ayuk*

Dissertation Title: ADOPTION AND WELFARE IMPACTS OF MULTIPLE MAIZE PRODUCTION TECHNOLOGIES ON SMALLHOLDER FARMERS IN CAMEROON

Supervisor: Prof AA Ogundeji

Co-Supervisor: Mr YS NYAM

MASTER OF SCIENCE MAJORING IN APPLIED STATISTICS

QHOBELA, Maphoka Grace

MASTER OF SCIENCE MAJORING IN ASTROPHYSICS

BARNARD, Joleen*

Dissertation Title: OPTICAL SPECTROPOLARIMETRY OBSERVATIONS OF A SELECTION OF BLAZARS

Supervisor: Prof B van Soelen

MASTER OF SCIENCE MAJORING IN BIOCHEMISTRY

BONESCHANS, Martha Barendina

Dissertation Title: PURIFICATION STRATEGIES FOR EQUINE CHORIONIC GONADOTROPIN

Supervisor: Dr FH O'Neill

Co-Supervisor: Prof DJ Opperman

MOFOKENG, Thato Mothobi*

Dissertation Title: FUNCTIONAL AND STRUCTURAL COMPARISON OF FUNGAL UNSPECIFIC PEROXYGENASES

Supervisor: Prof DJ Opperman

Co-Supervisor: Prof MS Smit

THOBANE, Tshegofatso Benedict

Dissertation Title: THE EFFECT OF OLEIC ACID SUPPLEMENTATION ON LIPID DROPLET PRODUCTION, BETA-OXIDATION AND ROTAVIRUS REPLICATION

Supervisor: Prof HG O'Neill

Co-Supervisor: Mr WJ Sander

VAN HEERDEN, Sunél

Dissertation Title: EVALUATION OF FUNGAL OXIDASES FOR IN SITU H2O2 GENERATION FOR UNSPECIFIC PEROXYGENASE DRIVEN HYDROXYLATION

Supervisor: Prof DJ Opperman

Co-Supervisor: Prof MS Smit

MASTER OF SCIENCE MAJORING IN BOTANY

DU TOIT, Isabella*

FACULTY OF NATURAL AND AGRICULTURAL SCIENCES

Dissertation Title: TRIAZOLE FUNGICIDE SENSITIVITY AMONG SOUTH AFRICAN PUCCINIA GRAMINIS F. SP. TRITICI ISOLATES

Supervisor: Prof B Visser

Co-Supervisor: Dr LA Rothmann

KHOZA, Bongiwe Minah*

Dissertation Title: PHYSIO-MORPHOLOGICAL AND BIOCHEMICAL TRAITS OF DI-BUTYL-DITHIOPHOSPHATE TREATED DROUGHT-STRESSED EDAMAME

Supervisor: Dr MJ Moloi

Co-Supervisor: Prof. N.B. Bowden

SEKHURWANE, Masego

Dissertation Title: INFLUENCE OF DIFFERENT SELENIUM APPLICATION METHODS ON THE PHYSIOLOGY AND MORPHOLOGY OF DROUGHT-STRESSED EDAMAME

Supervisor: Dr MJ Moloi

MASTER OF SCIENCE MAJORING IN CHEMISTRY

DE BEER, Francois Jacob*

Dissertation Title: SYNTHESIS OF AMINO ACIDS WITH DONOR AND ACCEPTOR SUBSTITUENTS

Supervisor: Prof V Azov

Co-Supervisor: Dr DV Kama

MTSHALI, Zinhle*

Dissertation Title: SYNTHESIS, ELECTROCHEMISTRY AND DFT OF POLYPYRIDINE COMPLEXES OF Mn AND Ni

Supervisor: Prof. Jeanet Conradie

VAN DYK, Hannah*

Dissertation Title: A STRUCTURAL, SPECTROSCOPIC AND ELECTRONIC STUDY OF OXIME GROUP 9 MODEL COMPLEXES

Supervisor: Prof A Brink

Co-Supervisor: Dr PP Mokolokolo

MASTER OF SCIENCE MAJORING IN CLIMATE CHANGE

KHUNWANA, Mulalo

NDELENI, Xoliswa

MASTER OF SCIENCE MAJORING IN CONSUMER SCIENCE

FORD, Lericia

Dissertation Title: DORPER FLEECE: CHARACTERIZATION OF FIBRES AND EVALUATION OF FELTED TEXTILE PROPERTIES TO REDUCE WASTE WOOL

Supervisor: Dr JF Vermaas

Co-Supervisor: Mrs A Gericke

LOUW, Malessa

Dissertation Title: INVESTIGATION OF THE FOOD SECURITY SITUATION AND FOOD CONSUMPTION PATTERNS IN GRASSLAND PHASE 4 INFORMAL SETTLEMENT IN MANGAUNG, SOUTH AFRICA

Supervisor: Dr A Du Toit

Co-Supervisor: Dr N Cronje

MONNAPULA, Matseliso Masetsi*

Dissertation Title: EXAMINING THE TEXTILE PROPERTIES, CHARACTERIZATION, NATURAL DYEING AND CONSUMER ACCEPTANCE OF BACTERIAL CELLULOSE: A POTENTIAL SUSTAINABLE TEXTILE

Supervisor: Dr JF Vermaas

Co-Supervisor: Dr A Du Toit

Co-Supervisor: Prof C Hugo

REBE, Sisipho

Dissertation Title: SOUTH AFRICAN CONSUMERS' ATTITUDES, OVERALL ACCEPTABILITY AND JUST-ABOUT-RIGHT SCALING OF NOVEL NIXTAMALIZED MAIZE PRODUCTS

Supervisor: Dr A Du Toit

Co-Supervisor: Dr C Bothma

ZULU, Ayanda

Dissertation Title: CONSUMER PERCEPTION, SENSORY ATTRIBUTES

AND PHYSICOCHEMICAL CHARACTERIZATION OF SPEKBOOM (PORTULACARIA AFRA)

Supervisor: Dr A Du Toit

Co-Supervisor: Prof M De Wit

MASTER OF SCIENCE MAJORING IN ENTOMOLOGY

NETSHILUVHI, Mukonazwothe

Dissertation Title: ROLE OF PLANT PHYLOGENY AND CHEMISTRY IN PREDICTING THE HOST RANGE OF *SULEIMA SKINNERANA* HEINRICH (LEPIDOPTERA: TORTICIDAE)

Supervisor: Dr Frank Chidawanyika

Co-Supervisor: Dr D Simelane

MASTER OF SCIENCE MAJORING IN ENVIRONMENTAL MANAGEMENT

ENSLIN, Chane

MAPAPU, Sivuyisiwe

MASTER OF SCIENCE MAJORING IN FOOD SCIENCE

NKOI, Vuyelwa Felicia*

Dissertation Title: COMPARISON OF OPUNTIA CACTUS MUCILAGE PROTEIN AND SOY PROTEIN IN FUNCTIONAL FOOD SYSTEMS: CONTENT, EMULSIFICATION AND FOAMING

Supervisor: Prof M de Wit

Co-Supervisor: Dr A Van Biljon

MASTER OF SCIENCE MAJORING IN GENETICS

HUGHES, Katherine Alexandra*

Dissertation Title: GENETIC MANAGEMENT AND TRACEABILITY TOOLS FOR LIONS (PANTHERA LEO) IN SOUTH AFRICA: INSIGHTS FROM MITOCHONDRIAL AND NUCLEAR DATA

Supervisor: Prof A Kotze

Co-Supervisor: Prof JP Grobler

JANSE VAN VUUREN, Hannah

Dissertation Title: THE GENETIC STATUS OF RED HARTEBEEST (ALCELAPHUS BUSELAPHUS CAAMA) POPULATIONS IN THE FREE STATE AND NORTHERN CAPE PROVINCES: CONSERVATION MANAGEMENT IMPLICATIONS

Supervisor: Prof JP Grobler

Co-Supervisor: Prof FE Zachos

Co-Supervisor: Prof BK Reilly

Co-Supervisor: Mr HP Cronje

MAGAGULA, Nomasonto Veronica

Dissertation Title: CHECKLIST OF NON-NATIVE MYCORRHIZAL FUNGI FROM THE CAPE TOWN AND STELLENBOSCH AREAS

Supervisor: Dr M Gryzenhout

Co-Supervisor: Prof. J. Wilson

MARAIS, Jodea

Dissertation Title: GENEALOGY AND GENETIC DIVERSITY IN ARTIFICIALLY MANAGED WHITE RHINO (CERATOTHERIUM SIMUM) POPULATIONS

Supervisor: Prof JP Grobler

Co-Supervisor: Dr K Ehlers

MYBURGH, Mart-Mari Mariëtte

Dissertation Title: ASSESSING INSECT BIODIVERSITY OF AN AGRICULTURE INFLUENCED LANDSCAPE IN THE CENTRAL WINTERBERG MOUNTAINS, EASTERN CAPE PROVINCE, SOUTH AFRICA

Supervisor: Dr WG Coetzer

Co-Supervisor: Mr T Madisha

MASTER OF SCIENCE MAJORING IN GEOGRAPHY

GANGATHELE, Ayabonga Mvikeli

Dissertation Title: PEATLAND HYDROLOGY RESPONSE TO PEAT DEGRADATION: A CASE STUDY OF THE WATERKLOOFSPUIT MIRE, KGASWANE MOUNTAIN RESERVE, SOUTH AFRICA

Supervisor: Dr. J.J Le Roux

Co-Supervisor: Dr. P-L Grundling, Dr. A.T Grundling

THEUNISSEN, Johannes Marthinus

Dissertation Title: RESTORATION OF THE SEVERELY GULLIED TSITSA

RIVER CATCHMENT: WHERE TO BEGIN?

Supervisor: Dr JJ Le Roux

Co-Supervisor: Dr EM Rudolph

MASTER OF SCIENCE MAJORING IN GEOHYDROLOGY

ENGELBRECHT, Corné*

Dissertation Title: WELL EFFICIENCY AND PERFORMANCE: INFLUENCING FACTORS AND MANAGEMENT GUIDELINES A CASE STUDY OF PAROW INDUSTRIA NEAR CAPE TOWN, WESTERN CAPE

Supervisor: Mr PJH Lourens

Co-Supervisor: Prof KT Witthuser

KHOLOTSA, Mathapelo Emely*

Dissertation Title: THE ANALYSIS OF DISSOLUTION TRAPPING MECHANISM ON CARBON DIOXIDE PLUME: CARBON CAPTURE AND STORAGE (CCS)

Supervisor: Prof A Atangana

MULDER, Daniél*

Dissertation Title: DELINEATION OF GROUNDWATER PROTECTION ZONES: TOWARDS A GROUNDWATER MANAGEMENT PLAN IN THE SUTHERLAND AREA, SOUTH AFRICA

Supervisor: Prof FD Fourie

NGOBE, Thandeka Fortunate

Dissertation Title: GEOPHYSICAL INVESTIGATION IN THE KHAKHEA-BRAY DOLOMITE TRANSBOUNDARY AQUIFER

Supervisor: **Prof M Gomo**

MASTER OF SCIENCE MAJORING IN INTEGRATED WATER MANAGEMENT

DAVIS, Philippa Zelda

KGABILENG, Nametso

MAGONONO, Fhatuwani Aron

MASIMINI, Nomakhaya Gladys*

MATHEDIMOSA, Tshilidzi Steven*

MASTER OF SCIENCE MAJORING IN MATHEMATICAL STATISTICS

VOGES, Jacob Louw*

Dissertation Title: BAYESIAN STATISTICAL PROCESS CONTROL IN BUSINESS AND INDUSTRY

Supervisor: Prof AJ Van Der Merwe

MASTER OF SCIENCE MAJORING IN MICROBIOLOGY

ALOM, Jameel

Dissertation Title: SPATIAL DISTRIBUTION OF BACTERIAL DIVERSITY IN A PASSIVE CHEMICAL ACID MINE DRAINAGE TREATMENT SYSTEM

Supervisor: Dr JC Castillo Hernandez

Co-Supervisor: Miss A Matu

BEAUZEC, Deon

Dissertation Title: THE EVALUATION OF A CONTINUAL DISINFECTION PROGRAM ON A COMMERCIAL BROILER CHICKEN FARM

Supervisor: Prof RR Bragg

Co-Supervisor: Ms SJ McCarlie

STAATS, Gunther Johann*

Dissertation Title: EVALUATING THE ROLE OF EFFLUX PUMPS IN BACTERIAL DISINFECTANT RESISTANCE

Supervisor: Prof RR Bragg

Co-Supervisor: Dr CE Boucher

MASTER OF SCIENCE MAJORING IN MINERAL RESOURCE MANAGEMENT

DAVIS, Anthony Daniel

KALI, Charlotte Maenge

VAN DEVENTER, Alet

MASTER OF SCIENCE MAJORING IN RISK ANALYSIS

LETSOSA, Seeiso Samuel*

Dissertation Title: A COMPARISON OF

NONPARAMETRIC ESTIMATION METHODS FOR DIFFERENTIAL ENTROPY

Supervisor: Dr MD Diko

MASTER OF SCIENCE MAJORING IN SOIL SCIENCES INTERDISCIPLINARY

KOTZE, Jacobus Johannes

Dissertation Title: QUANTIFYING SOIL CARBON STOCKS IN ALPINE AREAS OF THE MALOTI-DRAKENSBERG MOUNTAINS USING DIGITAL SOIL MAPPING APPROACHES

Supervisor:

MASTER OF SCIENCE MAJORING IN ZOOLOGY

STUART, Brandon Philip*

Dissertation Title: THE POSTCRANIAL DESCRIPTION OF THE THEROCEPHALIANS *THERIOGNATHUS* AND *MOSCHORHINUS* FROM THE KAROO BASIN OF SOUTH AFRICA

Supervisor: Dr J Botha

DOCTORAL DEGREES

DOCTOR OF PHILOSOPHY

LEVENDAL, Carol

Carol Levendal was born in Cape Town on the 28th of February 1957. She matriculated at the Harold Cressy High school in 1975. She completed numerous Diplomas in Nursing between 1980 and 1988 when she obtained a Diploma in Nursing Education from the University of the Western Cape. She obtained a degree in Nursing in 1997 from Southern Queensland University with the Dean's Outstanding Achievement Award. She obtained a Master's in Public Health in 2003. She completed undergraduate studies in economics and postgraduate studies in management and a PhD in Sustainable Agriculture in 2022 at the University of the Free State. She retired as a Director Extension in 2021 from the Department of Agriculture Western Cape

With her thesis, titled: **THE STUDY ESTABLISHED WHAT SETS APART AGRICULTURAL ADVISORS WHO HAVE A POSITIVE EFFECT ON FARMERS' AGRICULTURAL OUTPUT FROM THOSE WHO DO NOT.** It argued, a foundation in Extension Science enables extensionists to improve farmers' livelihoods. Data triangulation methodology using four data sources was employed to determine the success profiles of the extensionists that provide an advisory service in the Western Cape. One measured the advisor's performance in the field using criteria developed by reviewing various literature. The criteria were tested with agricultural advisors and evaluated by their managers and specialists and SASAE experts with a Log Frame Analysis using problem and objective analysis methods. A questionnaire determined the demographics. Other sources were the success rate of the farms and the farmers' ratings of the extensionists taken from other studies in the Western Cape. The profiles were compared to determine if an Extension Science foundation would improve the farmers' livelihood.

Supervisor: Prof JA Van Niekerk

Co-Supervisor 1: Prof EF Zwane

Co-Supervisor 2: Prof JW Swanepoel

SIMELANE, Victor Bongumusa

Victor Bongumusa Simelane was born on 8 August 1975 in Manzini, Eswatini. He matriculated at Salesian High School in 1994, obtained a Diploma in Agriculture (cum laude) in 1998, and a BSc degree in Agronomy from the University of Swaziland in 2003. He started his career as an assistant research officer in maize breeding at Malkerns Research Station in Luyengo. In 2005 he received a Rockefeller Foundation Scholarship from the University of Zambia for an MSc in Plant Breeding. In 2010, he joined the University of Eswatini as a lecturer in Plant Breeding, a position he still holds.

With his thesis, titled: **GENETIC DIVERSITY, AGRONOMIC PERFORMANCE AND NUTRITIONAL STATUS OF MAIZE (ZEA MAYS) LANDRACES FROM ESWATINI,** the candidate makes an important contribution, as the information towards knowing the present genetic diversity of landraces was long overdue. The diversity study can be used as a basis for formulating heterotic groups to be used in breeding efforts and to direct future breeding research. The study firstly focused on the genetic variability of the Eswatini Maize Landrace Collection, using microsatellite markers. The observed genetic diversity indicated that there were useful genes that can be exploited. A representative collection of 70 genetically diverse landraces were further analysed for yield, morphological and nutritional characteristics across three locations and for two seasons. This second part of the study highlighted that certain landraces can effectively be selected and used as source germplasm for breeding cultivars with greater adaptability, stability and improved yield.

Supervisor: Dr A van Biljon

Co-Supervisor: Prof A Minnaar-Ontong

ZIELKE-OLIVIER, Josepha Simone Doris Renate

Josepha Zielke-Olivier was born on 18 December 1986 in Grossenhain, eastern Germany. She matriculated at Wermelskirchen Gymnasium in 2006 and immigrated to South Africa in 2007. She graduated with a BSc degree in Environmental Sciences (cum laude) at Nelson Mandela Metropolitan University in 2011, BSc Hons in Geology in 2012, and a MSc of Geohydrology with distinction at University of the Free State (UFS) in 2015. She started her career as an assistant hydrogeologist and fulltime PhD student at the Institute for Groundwater Studies in 2016 and became appointed as a hydrogeologist by Delta H Water System Modelling in 2019.

With her thesis, titled: **INVESTIGATING THE INFLUENCE OF A GRABEN STRUCTURE ON THE DISTRIBUTION OF GROUNDWATER CONTAMINANTS,** the candidate contributes to the hydrogeological flow dynamics within a graben at a complex coal mining and industrial site, focusing on the driving factors of sulfate contamination in groundwater. Using an integrated, multidisciplinary approach, Zielke-Olivier conducted a hydrogeochemical and hydrogeological assessment on multiple sources and pathways with respect to sulfate contamination to construct a sound conceptual model. Additionally, this study contributes to the existing research gap of statistically derived aquifer vulnerability assessments by implementing different GIS-integrated statistical model techniques with the same input data to compare model performances and accuracy. The study argues that GIS-integrated machine learning methods are most suitable to assess aquifer vulnerability in a complex structural environment and provide sufficient information for sustainable groundwater management when combined with solid conceptual models without the necessity to construct numerical flow and transport models.

Supervisor: Prof. P.D. Vermeulen

Co-Supervisor: Prof. FD Fourie

DOCTOR OF PHILOSOPHY MAJORING IN AGRONOMY INTERDISCIPLINARY

DZVENE, Admire Rukudzo

Dzvene Admire Rukudzo was born on 18 January 1989 in Zvishavane, Zimbabwe. He started his high school education at Liebenberg in 2003 and matriculated at Nyashanu Mission School, Zimbabwe in 2009. He obtained a BSc Crop and Soil Science degree in 2013, BSc Soil Science Hons (*cum laude*) in 2014, and a Master of Crop Science in 2018 from the University of Fort Hare, South Africa. He is currently a research assistant at the Department of Soil-, Crop- and Climate Sciences, University of the Free State.

With his thesis, titled, **EFFECTS OF COVER CROP MANAGEMENT ON MAIZE (*Zea mays* L.) PRODUCTIVITY AND RESOURCE USE UNDER IN-FIELD RAINWATER HARVESTING,** the candidate contributes to sustainable crop production. The candidate provides a comprehensive understanding of the ecological and environmental factors that influence the growth and development of intercropped cover crops and their impact on the main crop. The study provides insights into the optimal intercropping time and planting density of sunn hemp as a cover crop to achieve the best results, while leading to improved soil health, optimal water and radiation resource use, as well as increased yields. New findings of radiation extinction coefficient (*k*) values for sunn hemp and maize under different management practices were identified. Applying this knowledge will help farmers make informed decisions and adopt sustainable practices that will simultaneously benefit the environment and their livelihoods.

Supervisor: Dr. WA Tesfuhuney

Co-Supervisor 1: Prof. S Walker

Co-Supervisor 2: Prof. GM Ceronio

DOCTOR OF PHILOSOPHY MAJORING IN BIOCHEMISTRY

LEKENA, Nkhasi

Nkhasi Lekena was born in Matatiele, Eastern Cape on the 13th September 1990. She received her secondary education at Mokheseng Secondary School in Mehloloaneng, Matatiele and matriculated in 2008. After this, she obtained her BSc degree in 2011 at the University of the Free State (UFS) and pursued her postgraduate studies in Biochemistry with a BSc Hons in 2015 and Masters in 2018 at the same institution. She then furthered her passion for research at the UFS and in 2022 obtained her PhD in Biochemistry. She commenced with a postdoctoral fellowship at the UFS in 2023.

With her thesis, titled: **RECOMBINANT EXPRESSION AND PURIFICATION OF EQUINE CHORIONIC GONADOTROPIN IN MAMMALIAN CELLS,** the candidate makes a meaningful contribution to the search for alternative methods to produce equine chorionic gonadotropin (eCG). The hormone eCG is used in livestock reproduction processes. Currently, the global commercial supply is largely dependent on eCG obtained from the serum of pregnant mares with disadvantages including potential blood contaminants, animal welfare issues and inter batch variations. Making use of recombinant molecular techniques, two mammalian cell lines stably expressing recombinant eCG under the control of the human elongation factor 1 alpha (EF-1α) or human cytomegalovirus immediate early (CMV-IE) promoters were generated. The produced recombinant eCG was characterised in vitro and demonstrated the ability to induce follicle-stimulating hormone and luteinizing hormone like activities. The work is currently being furthered for commercial application.

Supervisor: Dr FH O'Neill PROMOTER

Co-Supervisor : Prof HG O'Neill

Co-Supervisor : Prof DJ Opperman

DOCTOR OF PHILOSOPHY MAJORING IN BOTANY

BILAL, Huzaifa Bilal

Huzaifa Bilal was born on 12 April 1992 in the Jhang district of Punjab, Pakistan. He matriculated at Kakki Nau High School in 2010 and completed a BSc Agricultural programme at the University of Sargodha in 2014, where he specialised in Genetics and Plant Breeding. In 2017, he completed his MSc at the Faisalabad University of Agriculture in Pakistan. He later worked as a research associate at the Nuclear Institute for Agriculture and Biology, exploring mungbean possibilities in wheat/rice intercropping systems. In 2018 he enrolled for a full-time PhD study.

With his thesis, titled**: PRIMING EFFECT OF LEAF RUST AND SALICYLIC ACID IN RUSSIAN WHEAT APHID RESISTANCE**, the candidate contriutes to the scholarship of sustainable pest management in wheat production. The candidate evaluated the potential of priming using leaf rust isolates or salicylic acid to protect wheat from Russian wheat aphid-induced damage. He employed phenotypic and biochemical strategies to determine the expression of resistance under primed conditions. The study validated that leaf rust isolates have a higher potency in enhancing resistance to different aphid biotypes in various wheat cultivars. Results indicated that antioxidative species are instrumental in protecting wheat against aphid infestation. This study contributes towards a shift to sustainable agricultural production that activates innate plant responses to enhance plant tolerance to biotic stress.

Supervisor: Dr L Mohase

Co-Supervisor: Prof W Boshoff

DOCTOR OF PHILOSOPHY MAJORING IN CHEMISTRY

ABRAHA, Yuel Weldemichael

Yuel Weldemichael Abraha was born on 20 August 1995 in Mendefera, Eritrea. He moved to Bloemfontein, South Africa in 2008, where he matriculated at Navalsig High School in 2013. He obtained a BSc in Physics in 2016, BSc Honours in Chemistry in 2017 and an MSc in Nanoscience in 2019, all degrees with distinction (cum laude) at the University of the Free State. He was awarded the Merck prize for the top third-year chemistry student in 2017. He is currently a research assistant at the Department of Chemistry, University of the Free State.

With his thesis, titled: **MIXED-LINKER ZEOLITIC IMIDAZOLATE FRAMEWORKS (ML-ZIFS) WITH APPLICATIONS IN THE STORAGE AND CONVERSION OF CO2 TO CYCLIC CARBONATES,** the candidate made a valuable contribution to the fields of Metal-Organic Frameworks (MOFs) and CO2 capture and utilization (CCU) technologies. Using the direct de novo method, he successfully synthesized and fully characterized eight novel mixed-linker ZIF systems. Linkers with electron-donating (CH3) and electron-withdrawing (NO2, SH, Cl and Br) functionalities were used to tune the CO2 adsorption and catalytic fixation (with epoxide substrates) properties of the resulting ML-ZIFs. The catalytic activity of ML-ZIFs is mainly dependent on linker functionality as well as the porosity of the MOFs. A large part of the thesis is published in two accredited international journals.

Supervisor: Dr. EHG Langner

CHIYINDIKO, Emmie

Emmie Chiyindiko was born in 1993 in Harare, Zimbabwe. She attained an honours degree in Applied Chemistry from the National University of Science and Technology, Zimbabwe (2016). As a published cum laude master's degree holder from the UFS, Emmie is also a multi-awardwinning science communicator with profile features in Forbes Science and News24, among

other publications. She is the founder of Falling Walls Lab Zimbabwe, a pitch competition for early career innovators. Emmie spent the last 5 years in academic research and lecturing. She plans to spend the next five years as a trailblazer in the open science and innovation.

With her thesis, titled: **SYNTHESIS, ELECTROCHEMISTRY AND DFT STUDY OF BENZOPHENONES, HYDROXYBENZOPHENONES AND THEIR CU COMPLEXES,** the candidate's main objective was to provide Density Functional Theory insight into the electrochemical behaviour of the ligands and complexes, as well as to obtain trends and relationships between experimental redox potentials and Density Functional Theory calculated energies. This resulted in five publications with the latest demonstrating relationships that enable the design related complexes with the desired redox potentials, as needed for example in catalysis, redox mediators and dyes sensitizers in dye sensitized solar cells (DSSC). Our findings in coordination chemistry, provided understanding into the molecule's electrochemical characteristics and their electrical influence on novel metal complexes. Additionally, the findings may be utilised to forecast the reduction potential of related compounds.

Supervisor: Prof J Conradie

Co-Supervisor: Dr. EHG Langner

MOTENTE, Mokete Albert

Mokete Albert Motente was born on 14 February 1991 in Maseru Lesotho. He completed his matric in 2008 at Mazenod High School in Maseru Lesotho. He enrolled for a (BSc. degree in Chemistry and Biology) at the National University of Lesotho in 2009.He obtained his undergraduate BSc degree in 2014; completed his BSc Honours in 2016 and then his MSc. in Chemistry in 2018.

With his thesis, titled: **HYDROXAMIC ACID N,O RHODIUM(I) COMPLEXES AS MODEL CARBONYLATION CATALYSTS** the candidate makes an important contribution to the knowledge base for the development of hydroxamic acid rhodium metal complexes in the industrial specialization of homogenous catalysis. This is imperative for the potential development of future agents which focuses on development of metal complexes for utilization in industrial processes such as the carbonylation of methanol to acetic acid. A range of novel organometallic compounds were synthesized and characterized by various techniques, including single crystal X-ray diffraction and NMR spectroscopy. A kinetic study based in deuterated chloroform was investigated and indicated an excellent correlation to establish the intimate reaction mechanism of the oxidative addition process.

Supervisor: Prof A. Brink

Co-Supervisor: Prof JA Venter

DOCTOR OF PHILOSOPHY MAJORING IN COMPUTER INFORMATION SYSTEMS

FOUCHÉ, Rouxan Colin

Rouxan Colin Fouché was born on 17 March 1983 in Zastron, Free State, South Africa. He matriculated at Zastron High School in 2001. He graduated with a BCom IT degree at the University of the Free Sate (UFS) in 2004. This was followed with a Postgraduate Certificate in Education (2007), BEd Hons (Professional Education Management and Leadership) (2010), BCom Hons IT (2012) and a MSc degree at the UFS. His career as a part-time junior lecturer began in 2005 and he rose through the ranks to become a lecturer at the UFS Department of Computer Science and Informatics

With his thesis, titled: **ADRESSING THE SOUTH AFRICAN DIGITAL DIVIDE THROUGH A COMMUNITY INFORMED STRATEGY FOR SERVICE-LEARNING: A CRITICAL UTOPIAN ACTION RESEARCH (CUAR) APPROACH,** the candidate

contributes to scholarship on bridging the South African digital divide through service-learning at a South African university. Overarchingly, the study followed an action research-inspired design, which was informed and guided by participatory action learning and action research (PALAR) and, more specifically, CUAR. The empirical part of this study consisted of three main research cycles, each with its own set of methods. The study provides evidence that service-learning can be used to successfully address the South African digital divide, with many participants using the knowledge and skills gained during the project to improve their lives. Despite the positive impact achieved through the project, the gained insights underscore the enormous potential for further improvements in the computer literacy levels of the participants and other community members.

Supervisor: Prof E Nel

DOCTOR OF PHILOSOPHY MAJORING IN CONSTRUCTION MANAGEMENT

MOYO, Lovemore

Lovemore Moyo, born on 27 July 1975 in Bulawayo, Zimbabwe received his secondary education at Sobukhazi Secondary in 1994 and A Levels at Hamilton High School in 1996 in Bulawayo. He obtained a Diploma in Architectural Technology in 1999 at the Bulawayo Polytechnic College and an Honours in Architectural Studies at the National University of Science and Technology, Zimbabwe in 2005. In 2012, he obtained a Master of Science in Project Management from the University of Pretoria in South Africa. Starting his career as an Architectural Technician in 1997, he is currently an Independent Consulting Project and Construction Management Professional.

With his thesis, titled: **DEVELOPING A THEORETICAL FRAMEWORK FOR THE ASSESSMENT OF PRACTICAL COMPLETION IN STANDARD CONSTRUCTION CONTRACTS IN SOUTH AFRICA,** the candidate contributes to the body of knowledge of practical completion of construction projects by focusing on a generic framework for the assessment of practical completion. Using a mixed methods approach, the study analysed data that informed the conceptualisation and development of an assessment framework for a standardised approach to such assessments in South Africa. The study highlights that the current practice of practical completion remains contentious because of different perspectives of what practical completion entails. The study argues that adopting a standardised assessment framework, such as the one developed, can reduce the subjectivity of the practical completion process and reduce disputes. The results highlight the value of such a guideline for assessing and certifying the practical completion of projects to social engineer relationships between stakeholders, improve trust, minimise disputes and meet client expectations.

Supervisor: Prof K Kajimo-Shakantu

DOCTOR OF PHILOSOPHY MAJORING IN DISASTER MANAGEMENT

DARRIS, Clement West

Clement West Darris, a dedicated clergyman, focuses on serving underprivileged communities and empowering youth through mentorship and guidance. A strong believer in teamwork, he studied at St. James Grammar School, IMCT, and later earned degrees in Bible and Practical Theology. A member of the Transatlantic Roundtable on Religion and Race, he began his career as a journalist for NTA and worked as a lead pastor in South Africa. Darris has experience as a research assistant at UFS and project coordinator at Leshabane eyeworld. Currently, he leads a parish in Zambia and directs Heritage Restoration Christian Centre to improve vulnerable lives.

With his thesis, titled: **BUILDING COMMUNITY RESILIENCE IN AREAS AFFECTED BY OIL EXPLOITATION PROJECTS: A CASE STUDY OF THE NIGER DELTA REGION NIGERIA** this study makes a significant contribution to the body of knowledge

by providing a new hybrid resilience model for building community resilience in areas impacted by oil exploitation in the Niger Delta region. Through exploratory and confirmatory factor analysis tests, multiple regression analysis, and mediation analysis, the study identified the factors that contribute to community resilience, including social capital, mitigation, preparedness, and rehabilitation. The study also recommends the establishment of a monitoring agency to oversee oil production in the Niger Delta region and the implementation of clear technical and policy regulations for effective governance. Furthermore, the study proposes the use of the newly developed resilience framework to strengthen community resilience in the region, with a particular focus on the factors that have the highest significant coefficients, namely mitigation and preparedness. Overall, the study's findings provide valuable insights for multinational oil companies, government, disaster management practitioners, researchers, students, and educators seeking to build sustainable community resilience in areas impacted by oil exploitation.

Supervisor: Dr. BM Hlalele

Co-Supervisor: Prof. JA Belle

TSHUMA, Mlamuleli

Mlamuleli Tshuma is a Public Servant in Zimbabwe born in rural Nkayi District in 1988 and passionate about social and economic development of communities. He holds a BSc Hon in Geography and Environmental Studies (2012) from the Midlands State University in Zimbabwe and an MSc in Disaster Management (2018) from the National University of Science and Technology in Zimbabwe.

With his thesis**, titled: DEVELOPING A FRAMEWORK FOR COMMUNITY PARTICIPATION IN MANAGING WATER, SANITATION, AND HYGIENE (WASH) RELATED HAZARDS IN FLOOD PRONE COMMUNITIES IN TSHOLOTSHO DISTRICT, ZIMBABWE** he developed a framework for community participation in managing WASH related hazards, which different stakeholders could adopt and thus contributed significantly to the body of knowledge in WASH and Disaster Management. The study further examined global scientific works on community participation, WASH and flood hazards from 2003 to 2021, and exposed gaps that researchers could further exploit and contribute to the advancement of the subject.

Supervisor: Prof JA Belle

Co-Supervisor: Dr A Ncube

DOCTOR OF PHILOSOPHY MAJORING IN FOOD SCIENCES

OPPERMAN, Rita

Rita Opperman was born in Polokwane on 15 April 1994. She received her secondary education in Bloemfontein, where she matriculated from Eunice High School in 2012. She obtained her B.Sc. Agric. Degree in Food Science in 2017, and her M.Sc. Agric. Degree in Food Science in 2019, both from the University of the Free State.

With her thesis, titled: **THE CHEMICAL, MICROBIAL, AND SENSORY QUALITY OF SOUTH AFRICAN BILTONG AND DRIED SAUSAGE AFTER THE APPLICATION OF DIFFERENT SODIUM REDUCTION STRATEGIES,** she makes significant contributions towards an international trend of reducing salt and sodium intake in food. A survey indicated that currently, 100 g Biltong provides nearly 50% of the recommended daily salt and sodium intake per individual. These traditional South African delicacies should match the demands of modern consumers. The aim was to reduce salt and sodium in biltong and dry sausage by ± 50%. Five treatments were evaluated: a positive control (typical amount of salt in biltong and dry sausage), a negative control (50% salt content of the positive control), and three salt replacers, in combination with 50% salt reduction.

Therefore, the salt content of dry sausage and biltong could be reduced by 50% with salt replacers without negatively affecting shelf life and flavour. Three manuscripts are being prepared for publication.

Supervisor: Prof. A Hugo

Co-Supervisor: Prof. C Hugo

Co-Supervisor: Dr. B. E. van Wyngaard

Co-Supervisor: Dr. M Cluff

VAN ROOYEN, Brandon Burger

Brandon van Rooyen was born on 22 July 1991 in Bloemfontein, South Africa. He matriculated from Grey College High School in 2009. Pursuing his love for natural science, he obtained a BSc Food Science and Biochemistry degree at the University of the Free State in 2015, a MSc Food Science degree in 2018 at Stellenbosch University and later his PhD in Food Science in 2023 at the University of the Free State. He started his career in 2017 as an Innovation R&D Food Scientist in Cape Town where he was able to apply his knowledge and innovative thinking skills.

With his thesis, titled: **EVALUATION OF NATIVE CACTUS PEAR MUCILAGE AS A FUNCTIONAL FOOD INGREDIENT AT INDUSTRIAL SCALE,** the candidate makes a significant contribution to the international body of knowledge promoting the cactus pear as a multi-functional crop. With this contribution, he highlights potential functional properties of an extract from the cactus pear that can ultimately be used in the development of biodegradable food packaging. After the successful development of a cactus pear-based packaging, he identified several factors that can be employed to improve the properties of this natural packaging. Two international conference proceeding articles have been published, with a third article being accepted awaiting publication, as well as a presentation having been made at an international scientific conference attaining to this work.

Supervisor: Prof. M de Wit

Co-Supervisor: Prof. G Osthoff

Co-Supervisor: Prof. A Hugo

DOCTOR OF PHILOSOPHY MAJORING IN GEOGRAPHY

DAEMANE, Mahlomola Ernest

Mahlomola Ernest Daemane was born on 21 May 1974 in QwaQwa, in the Free State Province. He matriculated at Tseki High School in 1991 and later attained a Degree in Bachelor of Science at University of the North, QwaQwa campus in 1997. He graduated with a BSc Hons degree at the University of the North, QwaQwa campus in 1998 and an MSc at the North-West University in 2008. His career as a scientist began in 2002, he rose through the ranks to become a General Manager in the Arid Research Unit at the South African National Parks. He is currently the Acting Senior General Manager, Research and Development at South African National Parks.

With his thesis, titled: **THE SPATIAL DISTRIBUTION OF THE WOODLAND AND GRASSLAND COMMUNITIES IN THE GOLDEN GATE HIGHLANDS NATIONAL PARK, FREE STATE PROVINCE, SOUTH AFRICA**, the candidate contributes to knowledge generation in the modelling of the Afrotemperate Forest, providing data on species diversity, and description of the plant communities found in the park. Using the Generalised Linear Model; topography, edaphic, fire frequency and remote sensing-based vegetation condition index were found to be most important environmental variables influencing the spatial distribution of the forests and woodland communities. The Bioclimatic model was used in projecting the historical and future

changes in the geographic ranges of the Afrotemperate forest species, and the water requirements and temperature were found as the most important bioclimatic variables influencing habitat suitability. The findings from this study are important for the conservation of the indigenous Afrotemperate forest and for the development and review of the park management plan. The different plant communities identified, and environmental variables can also be used in climate change studies and to monitor vegetation change over time.

Supervisor: Prof S Adelabu

Co-Supervisor: Prof A Ramoelo

DOCTOR OF PHILOSOPHY MAJORING IN GEOHYDROLOGY

LOURENS, Paul Joël Havemann

Paul Lourens was born on 4 January 1987 in Vryheid, Kwazulu-Natal, South Africa. He matriculated at Pioneer High School in 2005. He obtained the degree B.Sc. Geology in 2009, the degrees B.Sc. Honours in Geology and Geohydrology in 2010 and the degree M.Sc. Geohydrology with distinction in 2013, all at the University of the Free State. He started is career as research assistant in 2013 at the University of the Free State, Bloemfontein. In 2016 he was appointed in the Institute for Groundwater Studies and at present he is a lecturer at the University of the Free State.

With his thesis, titled: **DEVELOPMENT OF A GROUNDWATER MONITORING PROGRAMME FOR THE COAL-BASED SYNTHETIC FUEL INDUSTRY IN SOUTH AFRICA,** the candidate developed a quantitative risk assessment tool (MCA-Water Quality Risk Assessment Tool) based on the Monte Carlo technique/analysis of random sampling. The results of the risk assessment were used to design a new groundwater monitoring programme for the coal-based synthetic fuel industry of South Africa, as well as lists of important water quality parameters to monitor for any new coal-based synthetic fuel facility. The tool that can assist geohydrologist to optimize groundwater monitoring programmes in terms of what water quality parameter/s to monitor, and frequency of monitoring. The use of the tool is not limited to the coal-based synthetic fuel industry. It can also be applied too other industries that have the potential to impact or have impacted the groundwater regime if historical time-series water quality monitoring data is available.

Supervisor: Prof. PD Vermeulen

Co-Supervisor: Dr. RN Hansen

DOCTOR OF PHILOSOPHY MAJORING IN GEOINFORMATICS

COLLINS, Nacelle Berne

Nacelle Berne Collins was born in King Williams Town, Eastern Cape Province, on 31 December 1967. He received his secondary education in Centurion (Pretoria), where he matriculated at the Hoërskool Centurion in 1985. He obtained the degree BSc in Natural Sciences in 1990 (University of Stellenbosch), an Honors in Wildlife Management in 1991 (University of Pretoria), a Masters in Wildlife Management in 1997 (University of Pretoria), and a PhD in Botany in 2011 (University of the Free State), for which he received the E.M. van Zinderen Bakker-prize for outstanding Ph.D.

With his thesis,titled: **AN ALTERNATIVE APPROACH FOR LARGE-SCALE WETLAND MAPPING IN SOUTH AFRICA,** the candidate makes a contribution towards the international obligation of the South African Government to develop and maintain a national inventory of wetlands. Previous attempts at wetland inventorying using multi-spectral image analysis have over the past 21 years not yielded satisfactory results and have been described as being of sufficient severity to warrant investment

as a matter of urgency. The candidates research addresses this need during which he investigated alternative approaches for large scale wetland inventorying in South Africa. His findings allow for improved mapping accuracy at a fraction of the time, cost, and skills requirements of previously employed techniques. The results of his study have already been adopted by the South African National Biodiversity Institute as the standard for wetland inventorying in South Africa, to which the candidate currently serves as technical advisor for its implementation.

Supervisor: Prof S Adelabu

Co-Supervisor: Dr A van der Walt

Co-Supervisor: Dr H Booysen

DOCTOR OF PHILOSOPHY MAJORING IN GEOLOGY

KEET, Jarlen Jocelyn

Jarlen Keet (née Beukes) was born in Kimberley on 31 March 1990. She matriculated at Kimberley Girls' High School in 2007. She obtained her BSc (2011), BSc Hons (2012) and MSc (Geology) (2015) – all at the University of the Free State. In 2013 she was awarded an Erasmus Mundus scholarship to study for a semester at the University of Graz in Austria. In 2015 she completed a oneyear NRF internship at the Central Analytical Facility at Stellenbosch University. She was appointed as a lecturer in the Department of Geology at the University of the Free State in 2018.

With her thesis, titled**: A MULTI-ISOTOPE (S-Sr-Nd) INVESTIGATION OF THE FLATREEF, NORTHERN LIMB, BUSHVELD COMPLEX: PETROGENETIC IMPLICATIONS AND COMPARISON WITH THE MERENSKY REEF,** the candidate contributes substantially to our understanding of the petrogenesis of the Platreef / Flatreef in the Northern Limb of the Bushveld Complex, which is the world's largest repository of platinum-group elements (PGEs). Using whole-rock isotopic datasets, the candidate shows that the Platreef / Flatreef is a correlate of the Merensky and Bastard units, which are present elsewhere in the Bushveld Complex. Field-based evidence from the Northern Limb unequivocally shows that intrusion of the Main Zone postdated solidification of the Platreef. This implies that the Main Zone could not have been the source of PGEs within the Platreef / Flatreef, and by extension, the Merensky Reef, dispelling long-held views regarding the source of PGEs in the Merensky Reef.

Supervisor: Prof F Roelofse

Co-Supervisor: Prof CDK Gauert

DOCTOR OF PHILOSOPHY MAJORING IN GRASSLAND SCIENCE

BOYS, Jerome Marcelino

Jerome Marcelino Boys was born in Namibia and obtained a National Diploma in Agriculture at Neudamm Agricultural College in 2006. He completed the degree B.Sc. Agric. Animal/Grassland Science in 2011, B.Sc. Agric. Hons. Grassland Science in 2013 and M.Sc. Agric. Grassland Science in 2015 at the UFS. He started his career at the Ministry of Agriculture, Water and Land Reform in 2012. In November 2022 he was appointed Chief Forester at the National Botanical Research Institute (NBRI) within the Ministry of Environment, Forestry and Tourism (MEFT). He is currently the head of the NBRI and is responsible for research on vegetation ecology.

With his thesis, titled: **SUSTAINABLE WOOD HARVESTING PRINCIPLES WITH THE AIM TO RESTORE RANGELAND IN THE THORNBUSH SAVANNA OF NAMIBIA**, the candidate investigated the complex problem of bush thickening and the use of

wood harvesting for the sustainable restoration of affected rangelands of northern Namibia. The results of the study emphasise the importance of distinguishing between restoration versus wood harvesting for profit. He establishes novel scientific criteria for the sustainable utilization of the bush resource within the context of the ecological requirements for long-term restoration of bush-thickened areas. In addition, allometric regression equations were developed from harvested *Senegalia mellifera* and *Vachellia reficiens* plants for inclusion into a mathematical wood biomass quantification model. While bush control measures are very costly, the knowledge gained from this research project will be of significant value to landowners and the scientific community by providing clear guidelines of what to expect from various bush harvesting programs.

Supervisor: Prof. GN Smit

Co-Supervisor: Dr. PJ Malan

DOCTOR OF PHILOSOPHY MAJORING IN MICROBIOLOGY

SANDER, Willem Jacobus

Willem Jacobus Sander was born in Bloemfontein on 2 May 1992. He received his secondary education in Bloemfontein, where he matriculated from Hoërskool Sentraal in 2010. He obtained his BSc majoring in Microbiology in 2014, BSc (Hons) in Microbiology with distinction in 2015 and MSc in Microbiology with distinction in 2018, all from the University of the Free State. During his masters he publishes a well-received review article detailing the role of prostaglandin E2 in viral infections. He plans to further his career in the field of Virology and will soon join the University of Helsinki as a post-doctoral researcher.

With his thesis, titled: **INVESTIGATING THE ROLE OF VIROPLASM FORMATION AND CALCIUM LEVELS ON THE PRODUCTION OF PROSTAGLANDIN E2 DURING ROTAVIRUS INFECTION,** the candidate investigated the possible mechanisms used by rotavirus to induce a pro-inflammatory response leading to an enhanced proviral environment. Using an impressive array of techniques, the candidate shows that increases in cytoplasmic calcium levels, due to the viroporin domain in non-structural protein 4 of rotavirus, increases the activity of phospholipase A2, which in turn increases the production of PGE2 resulting in increased viral replication. With his contribution, the candidate not only opens new research avenues to combat this important childhood infection, but also provides possible approaches for next generation vaccine development. His findings have already produced one peer-reviewed publication with another in preparation. In addition, during his PhD, the candidate publishes a second review article on a topic unrelated to his PhD, in a journal with impact factor of 11.

Supervisor: Prof. H.G. O'Neill

Co-Supervisor: Prof. C.H. Pohl

DOCTOR OF PHILOSOPHY MAJORING IN PHYSICS

LIAN, Songyou

Songyou Lian was born on 15 October 1992 in Chaozhou, Guangdong Province, China. He received his senior high school education in Chaozhou, where he matriculated at Songchang high school in 2009. He obtained his BSc in Applied Physics in 2016 and an MSc in Materials Physics and Chemistry in 2019 at Shantou University.

With his thesis, titled: **GRAIN BOUNDARY DIFFUSION AND SURFACE SEGREGATION UNDER STRESS: THEORETICAL, EXPERIMENTAL AND MOLECULAR DYNAMICS INVESTIGATION,** the candidate makes a contribution to the quantification of depth profiling, grain boundary diffusion and surface segregation. During his study, the candidate modified the Mixing-Roughness-Information depth (MRI) model to extract the diffusion coefficient from thin files and investigate sputtering-induced

effects on the diffusion coefficient during profiling. The candidate proposed a method for calculating dynamic and equilibrium segregation at a surface and the interface of thin films under stress. Using molecular dynamics calculations, the candidate successfully simulated surface segregation. **T**he candidate then developed a method to extract the intrinsic diffusion coefficient from grain boundary diffusion depth profiles. This was applied to a practical problem of water vapour diffusion in barrier films that preserve food freshness.

Supervisor: Prof. JJ Terblans

Co-Supervisor: Prof. HC Swart

Co-Supervisor: Prof. JY.Wang

NGAKE, Tankiso Lawrence

Tankiso Lawrence Ngake was born in Botshabelo, in the Free State on 19 December 1994. He received his secondary education in Botshabelo, where he matriculated at Kgorathuto Secondary School in 2012. He obtained his BSc degree in Chemistry in 2015 and completed Honours in Chemistry in 2016. He obtained his Masters in Chemistry with distinction and won the best Chemistry student award in 2019. In 2023 he completed his PhD in Physics at the University of the Free State.

With his thesis, titled: **THE STUDY OF SILVER NANOPARTICLES' PHYSICOCHEMICAL PROPERTIES IN RELATION TO TOXICITY VIA MOLECULAR DYNAMICS AND DENSITY FUCNTIONAL THEORY MODELLING,** the candidate contributes to scholarship on the uptake and toxicity of silver nanoparticles for drug-delivery systems. Using physical and chemical properties, such as the size, shape and surface charge the reactivity and toxicity is investigated via computational simulations. Different AgNPs were designed in a computational environment and allowed to interact with DPPC bilayer lipids. The study finds that the cationic AgNPs were unable to penetrate through the saturated acyl chains of the DPPC lipid, resulting in greater damage to the bilayer. He also showed that the hydrophobic functional groups like biotin and methyl induced greater damage to the POPE bilayer compared to the hydrophilic functional groups. The candidate has already published 2 articles from this work with a 3rd currently under review. He has also made several conference contributions.

Supervisor: Prof. RA Harris

Co-Supervisor: Dr. S Cronjé

Co-Supervisor: Prof. M Gulumian

NQAYI, Sibusiso

Sibusiso Nqayi was born in Randfontein, Johannesburg on 20 January 1994. He matriculated in E.N Seku Senior Secondary School based in Mtentu, Eastern Cape in 2012 with prizes for the best student in many subjects including Physics. He obtained his first degree, BSc in Chemistry at UFS in 2016, Honours in Physics (UFS) 2017, and a Master degree in Nanoscience (UFS) in 2019. In 2020 he began a career in academia as a Physics lecturer at the Central University of Technology, where he is still employed. During this time, he also pursued his PhD with UFS, which he completed in 2022.

With his thesis**, titled: MODELLING AND SIMULATION STUDY OF THE PHYSICOCHEMICAL PROPERTIES IN RELATION TO TOXICITY OF GOLD NANOSTRUCTURES,** the candidate investigates to the role played by gold nanostructures' physicochemical properties in cellular internalization and toxicity with reference to their use as drug-delivery-vehicles. By using molecular dynamics and density functional theory he shows how coordination chemistry, binding energy and PEGylation can be used to investigate the influence of AuNS physical properties with different functional groups to predict the toxicity of these nanosystems in the context of bilayer phospholipids' interaction. He shows that the PEGylation of non-spherical NSs enhances their clearance rate. The functional group enhances the translocation rate by 100-fold and the PEGylation of the AuNSs neutralizes the surface charge and make them highly insoluble in the membrane. Two manuscripts have been

published in international journals and a 3rd manuscript is currently under review. The candidate has also made several conference contributions with this work.

Supervisor: Prof. RA Harris

Co-Supervisor: Dr. S Cronjé

Co-Supervisor: Prof. M Gulumian

DOCTOR OF PHILOSOPHY MAJORING IN PLANT PATHOLOGY

CHIURAISE, Nyashadzashe

Nyasha Chiuraise graduated from Midlands State University in Zimbabwe with a BSc Biological Sciences in 2008. He completed his BSc Honours in Plant Pathology and MSc Plant Breeding (*cum laude*) at the University of KwaZulu-Natal in 2013 and 2015, respectively. He started working as a plant pathologist at Plant Health Products, Pietermaritzburg, KwaZulu-Natal in 2013 focusing on biological control of pests, including fungal pathogens of cereals. In 2015, he joined SeedCo as a plant pathologist for field crops working on maize, wheat and soybean, and is currently based in Harare, Zimbabwe.

With his thesis, titled: **PATHOGEN VARIATION AND GENETIC CONTROL OF *PUCCINIA TRITICINA* IN ZIMBABWE**, the candidate reported on the distribution, and race and genetic diversity of *P. triticina*, as well as on the genetic base of resistance sources in advanced wheat accessions. Phenotyping results from rust surveys revealed *P. triticina* race MCDS as dominant in Zimbabwe. Genotyping of *P. triticina* isolates showed a high genetic similarity between the Zimbabwean isolates and representative isolates of the South African races MCDS, MCPS and MFPS. The F_2 segregation ratios revealed the presence of mostly single dominant resistance genes, whereas molecular marker studies indicated the presence of *Lr19* and several race non-specific sources of leaf rust resistance in Zimbabwean wheat germplasm. The study identified wheat varieties that combine wide adaptation with stable yields, acceptable leaf rust resistance, while meeting the quality traits required in the wheat value chain.

Supervisor: Prof WHP Boshoff

Co-Supervisor: Prof B Visser

Co-Supervisor: Dr A Marè

DOCTOR OF PHILOSOPHY MAJORING IN STATISTICS

PAVOLO, Domingo

Domingo Pavolo was born on 30 April 1968 in Harare, Zimbabwe. He matriculated at Marlborough High School in 1988. He graduated with a BSc. Honours degree (Mechanical Engineering) from the University of Zimbabwe in 1993, an MSc. degree (Operations Research) in 2003, and an MEng. degree (Manufacturing Systems and Operations Management) in 2005 from the National University of Science and Technology, Zimbabwe. His career as an Engineer began with the National Railways of Zimbabwe in 1991, rising through the ranks in various industries to Divisional CEO(Manufacturing). He was part-time lecturer at the National University of Science and Technology, Zimbabwe from 2003-2006.

With his thesis, titled: **STATISTICAL OPTIMISATION OF RUBBER COVERED CONVEYOR BELTING CURE TIMES USING HYBRID ENSEMBLING**, the candidate contributes to scholarship on credible methodology in determining cure time for

the vulcanisation stage that simultaneously obtains minimum quality requirements given rubber thickness in conveyor belt manufacturing. A basic statistical relationship between the responses and process input factors is proposed, and more optimal cure times are estimated than a favoured contemporary rule of thumb. The error of optimism is shown to be due to loss of information in discarded good competing models, and that the correction of classical model selection criteria for small sample size inefficiency does not have significant effect at multiple model inference level. It is argued that assembling of results from several competing response models compensates for small sample size dataset problems resulting in credible cure time estimates compared to selecting single best models per response for optimisation.

Supervisor: Prof. D Chikobvu

DOCTOR OF PHILOSOPHY MAJORING IN SUSTAINABLE AGRICULTURE

HOVE, Mthintwa Tawanda

Mthintwa Tawanda Hove is an International Agriculture Development practitioner born in Zimbabwe in 1987. He is a masters graduate with the University of free state in Sustainable agriculture and has a Bachelor of Commerce in marketing majoring in Agribusiness. His expertise consists of classic agronomy, digital agriculture, e-extension, agriculture value chain and market systems development and smallholder focussed seed and cropping systems improvement. He is currently employed with the International Maize and wheat Improvement center (CIMMYT) supporting the southern African region in building sustainable resilient and nutrition sensitive food systems. He is a winner of the World food programme Innovation accelerator award in Munich Germany for his digital app called Agrishare.

With his thesis, titled: **DRIVING PRO POOR VALUE CHAIN DEVELOPMENT LEVERAGING ON NGO-PRIVATE SECTOR PARTNERSHIPS IN ZIMBABWE,** he examines the systemic and operational constraints in value chain development practice that result in a disproportionate relationship and negative variance between donor grants (including philanthropic capital) investments into agricultural value chain development and the resultant output of the targeted smallholder farmers thereof from a production, productivity and income perspective. His study endeavours to answer what needs to be addressed for donors realise return on investment on market driven interventions designed to uplift the smallholder farmer out of poverty through trade linkages with both formal and informal markets. Through the utilisation of a market systems lens, core areas of focus include the value chain intervention strategy, the extension and advisory systems established, the partnership models and quality, the farmer output and income, and the challenges and opportunities existing within the value chain development sphere. Core findings demonstrate that investment have to be more all-encompassing of the smallholder farmer system components where investments in irrigation and improved genetic material have a huge bearing on production outputs. In addition, horticultural intervention that have export options seem to have stronger crowding in private sector capabilities compared to grain production.

Supervisor: Dr H Ngwenya

Co-Supervisor: Prof J Van Niekerk

MAHOPO, Tjale Cloupas

Tjale Cloupas Mahopo, was born on 01 October 1985 in Moletji, Polokwane. He matriculated at Mathabatha Secondary School in 2004. He graduated with a Bachelor of Science Degree in Nutrition in 2009 and a Master of Science Degree in Public Nutrition in 2013 at the University of Venda. He attained a Postgraduate Diploma in Health Education at the University of Cape Town in 2015. His career began in 2012 as a junior part-time lecturer and he was later appointed full-time and rose through the ranks to become a lecturer in the Department of Nutrition, University of Venda, in 2016.

With his thesis, titled: **DEVELOPMENT OF AN AGRICULTURAL FOOD ENTERPRISE MODEL IN RURAL TOWNS IN VHEMBE DISTRICT, LIMPOPO PROVINCE, SOUTH AFRICA,** the candidate contributes to scholarship in the areas of the food system, nutrition, agriculture, and the relevance of street food vendors to the economy. Using a mixed-method research approach, with a sample size of 511, he developed an agricultural food enterprise model for street food vendors in rural towns of the Limpopo province for improved competitiveness. Four main factors conditions, namely, production condition, chance condition, the role of government, and related and supporting industries, were derived from Porter's Diamond Model and value chain analysis. A SWOT analysis was used to propose actions required by relevant stakeholders to assist street food enterprises in the Vhembe district

Supervisor: Dr CN Nesamvuni

Co-Supervisor: Prof AE Nesamvuni

Co-Supervisor: Prof J van Nierkerk

NDWAMBI, Khuthadzo

Ndwambi Khuthadzo was born on 04th October 1986 in Thengwe-Tshithuthuni, Venda, Limpopo. He matriculated at Thengwe-High School in 2005. He obtained the degree of Bachelor of Earth Sciences in Mining and Environmental Geology in 2010. He enrolled in the same institution to pursue a master's degree in Mining and Environmental Geology, specializing in Groundwater Exploration. He has to date served in different portfolios; Junior Researcher Fellow at Khanimambo Innovative Solutions (2017- date), Project Reference Group for Water Utilization in Agriculture (2019- date), Hydrogeologist; Sustainable Drop Projects (2018- date)

With his thesis, titled: **THE APPLICATION OF THE GEOGRAPHICAL INFORMATION SYSTEM FOR THE DEVELOPMENT OF THE COMPREHENSIVE SUBTROPICAL FRUIT SUITABILITY MODEL: A CASE STUDY OF THE SELECTED SUBTROPICAL FRUIT, VHEMBE DISTRICT, LIMPOPO PROVINCE OF SOUTH AFRICA,** the candidate makes a contribution to developing an integrated fruit crop suitability model through the integration of the geo-environmental, climatological, and groundwater resources. With this contribution, he provides the basis for land use allocation and improvement in the socioeconomic status of rural communities through job creation. The results of this investigation serve as an indication of the value of this type of intervention to find a solution to food shortage and unsustainable agricultural operations that destroy the environment in marginal agricultural lands. Two papers from refereed journals have been published with three more papers submitted for publication.

Supervisor: Prof AE Nesamvuni

Co-Supervisor: Prof J van Niekerk

Co-Supervisor: Dr KA Tshikolomo

Co-Supervisor: Prof SN Mpandeli

THOBEJANE, Mamatime Kholofelo

Kholofelo Thobejane is a passionate Agricultural Economist, with experience in Gender equality, development, transformation, lecturing, and policy development. She holds a Mcom in Agric. Economics and a PGDip in Gender and Equality Studies from the University of Iceland. She worked as an Agricultural Development Manager and later joined the national Department of Agriculture as Chief Policy Development Expert. Later appointed as Senior manager in the Department of Agriculture, Forestry and Fisheries responsible for sector transformation, she also served as a member of the AgriBEE Charter Council and a board member of Thobo Trust. Kholofelo joined Suidwes, as the Managing Director of Katleho Agri, and served on the board for Agrinet Pty Ltd.

With her thesis, titled: **THE IMPACT OF EMPOWERING WOMEN FARMERS TOWARDS SUSTAINABLE AGRICULTURE IN THE GAUTENG PROVINCE OF SOUTH AFRICA**, her research focused on developing strategies to quantify the empowerment and agricultural sustainability of commercial women farmers in the Gauteng Province. The SA government has supported many laws to empower women, however, gender equality has not yet been achieved in SA, despite balanced progress in women's empowerment laws and policies since the introduction of the constitution in 1996. The agric. sector continues to struggle with issues related to women's empowerment. Even though the department of agriculture nationally has been implementing the women empowerment project since 1999, findings revealed that it is not easy to quantify the impact of agriculture on empowering women in the sector. Findings were that there was no statistically significant difference in the total no. of indicated challenges between female and male participants i.e., gender did not influence the no. of challenges faced by commercial farmers in GP. However, the findings of the Logframe Analysis showed that the strategies identified will positively ensure women's empowerment in agriculture is sustainable.

Supervisor: Prof. JA Van Niekerk

Co-Supervisor: Prof. JW Swanepoel

VENTER, Phillip

Phillip Venter was born on the 13th of December 1971 in Randburg, South Africa. He matriculated at Koster High School in 1989. He graduated with a Baccalaures Agriculturae degree in 1995 and a Magister in Sustainable Agriculture with distinction in 2011 at the University of the Free State. In 1996, he started his career as an agronomist in Lichtenburg, and in 2003 he was appointed as a senior agronomist for a leading industrial fertilizer company. In 2010 he made a career change and became the Executive Manager of market development at Laeveld Agrochem, where he heads up the plant nutrition and precision agricultural department.

With his thesis, titled: **THE SUSTAINABILITY OF NEW GENERATION FUTURE COMMERCIAL FARMERS IN SOUTH AFRICA, A CASE STUDY DONE IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA**, the candidate contributes to agriculture by developing a model to guide all role players on how to help emerging farmers progress to become sustainable commercial farmers. The New Generation Future Commercial Farmers (NGFCFs) model will focus on emerging farmers growing row crops under an off-take agreement and will also consider the government's role as a policy maker and service provider. The model will help create sustainable New Generation Future Commercial Farmers, which is essential to achieve sustainable food production for the present and future generations. Sustainable New Generation Future Commercial Farmers will also help the government achieve its National Development Plan for agriculture by playing an essential role in rural economic development and natural resource management and contributing significantly to household food security.

Supervisor: Prof J van Niekerk

Co-Supervisor: Dr E van Der Watt

WEBB, Bernadette

Bernadette Webb was born in Nababeep, Northern Cape, on 21 February 1969. She matriculated at the Dawid Bezuidenhout High School in Windhoek in 1986. She obtained the degrees BSc (Ed) in 1992, BSc (Hons) in 1993 and MSc (Botany) at the University of the Western Cape in 1999, and the PhD in Sustainable Agriculture in 2023 at the University of the Free State. She started her career as a forester in Namibia in 1993. In 2000 she joined the CSIR, where she built a career as an enterprise development specialist. She is currently an Associate Partner at Biosolutiones Technicas.

With her thesis, titled: **CREATING A MODEL TO DEVELOP SELF-SUSTAINABLE AQUACULTURE AGRIBUSINESS ENTERPRISES IN SOUTH AFRICA,** the candidate contributes to scholarship on Sustainable Aquaculture, by focusing on self-sustainability in aquaculture enterprises and ensuring industry viability, growth and resilience. Using a case study approach, she sampled 19 aquaculture farmers and role players to understand the reasons why many enterprises fail to

achieve self-sustainability. She identified critical success factors as sustainable farming methods, good business leadership and management, and efficient responses to challenges and opportunities. She then developed an integrated enterprise development model for emerging and established aquaculture entrepreneurs. With this contribution, she attempts to increase the success rate of start-ups, and the ability of enterprises to become financially self-sustainable. The study makes a significant contribution to policy-relevant knowledge on aquaculture agribusinesses in South Africa as the model can be applied to improve enterprise self-sustainability, the operating environment and enterprise support systems.

Supervisor: Prof AE Nesamvuni

Co-Supervisor: JA van Niekerk

DEAN'S MEDALS

AWARDED TO A STUDENT WHO ACHIEVED THE BEST RESULTS IN RESPECT OF A THREE-YEAR BACHELOR'S DEGREE IN THE FACULTY OF NATURAL AND AGRICULTURAL SCIENCES

HEMMING, Gabrielle Simone

BACHELOR OF SCIENCE MAJORING IN BIOCHEMISTRY AND PHYSIOLOGY

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

VAN DYK, Hannah

MASTER OF SCIENCE MAJORING IN CHEMISTRY

THE SEANAMARENA
THE TRADITIONAL BASOTHO BLANKET

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.

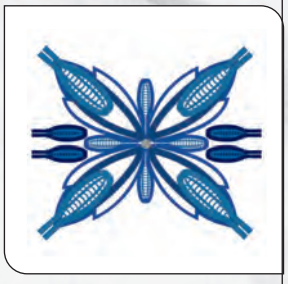
Through a shared history, we have become co-creators of our futures. For this reason, the UFS decided to incorporate our tradition with that of the Basotho in the design of our Main Procession graduation gowns.

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 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 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 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 **CLASS OF 2022**

Congratulations on your graduation! This officially makes you an alumnus of the University of the Free State. We are very proud of your achievements, excited to see what your future holds, and to connect with you in the bright future ahead of you!

KEEPING YOU INFORMED

Alumni are a real measure of a university's brand, and we strive to keep you informed of the latest news, campaigns, events, reunions, and projects emerging from the UFS. Stay connected by keeping an eye on our website, Facebook and LinkedIn pages, and email.

Through us, you are not just staying connected with the UFS, but also with other alumni. Let us connect you with alumni globally and reconnect with former peers.

KEEPING YOU CONNECTED

Not only do we want to keep you connected with what is happening at your alma mater, we want to keep on celebrating you too!

Make sure that you update your details every year in one of the following ways:

- Online at www.ufs.ac.za/alumni
- Email us at alumni@ufs.ac.za
- www.facebook.com/UFS.Alumni
- www.linkedin.com/school/u-f-s/

Kindly ensure you include your full names, date of birth, cellphone number, and private email address when updating your details.

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VISION 130
Renewal and Reimagination for Greater Impact

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