



### Beste Matie-graduandus

Hartlik geluk met die kwalifikasie wat jy vandag verwerf. Jy is 'n sprekende voorbeeld van die uitnemendheid waarna die Universiteit Stellenbosch (US) streef. Ons is trots op jou!

Jy is deel van 'n uitgelese groep, want ons gedenk vanjaar ons eeuwording as universiteit. Die US het in 1918 met vier fakulteite, 503 studente en 40 dosente begin. Vandag spog ons met tien fakulteite en 'n dinamiese gemeenskap van meer as 30 000 studente en 3 000 personeellede op vyf kampusse in die streek.

Ons bedank almal wat hierdie instelling help vorm en sy reputasie as 'n wêreldklas-akademiese instelling help vestig het. Terselfdertyd erken ons die Universiteit se bydrae tot die onregte van die verlede, waarvoor ons diepe berou het. Ons vra onvoorwaardelik om verskoning aan diegene wat uitgesluit was van die historiese voorregte wat die US geniet het. Ons vereer ook die kritiese Matiestemme van daardie tyd, wat aanhou praat het al is hulle verstoot. En uit verantwoordelikheid teenoor huidige en toekomstige geslagte verbind die US hom tot die ideaal van 'n inklusiewe wêreldklasuniversiteit in en vir Afrika.

Die US is jou akademiese tuiste. Bly asseblief 'n aktiewe lid van die Matie-familie via die alumniwebblad, sosiale media en gereelde alumni-funksies. Stuur vir die alumnikantoor ([alumni@sun.ac.za](mailto:alumni@sun.ac.za)) jou nuwe kontakbesonderhede sodat jy uitnodigings, nuusbriewe en die US-alumnitydskrif *Matieland* kan ontvang. Studies dui daarop dat betrokkenheid by sterk alumni-netwerke vrugte afwerp sover dit professionele ontwikkeling betref.

Ons beste wense vergesel jou!

Prof Wim de Villiers  
Rektor en Visekanselier

### Dear Matie Graduate

We warmly congratulate you on the qualification that you will be receiving here today. You exemplify the excellence that Stellenbosch University (SU) strives for. We are proud of you!

You are part of a very special group, because the University is commemorating its centenary this year. Starting out with four faculties, 503 students and 40 lecturing staff in 1918, SU today is home to 10 faculties, a dynamic community of more than 30 000 students and 3 000 staff members, spread over five campuses in the region.

We thank everyone who has helped to mould this institution and cement its reputation as a world-class academic institution. At the same time, SU acknowledges its contribution towards the injustices of the past. For this we have deep regret. We apologise unreservedly to those who were excluded from the historical privileges that SU enjoyed. We also honour the critical Matie voices of that time who would not be silenced despite being ostracised. And in responsibility towards the present and future generations, SU commits itself to the ideal of an inclusive, world-class university in and for Africa.

SU is your academic home. Please remain an active member of the Matie family via our alumni website, social media and regular alumni functions. Keep the alumni office ([alumni@sun.ac.za](mailto:alumni@sun.ac.za)) updated with your latest contact details so that you can receive invitations, newsletters and the SU alumni magazine, *Matieland*. Studies have shown that involvement in strong alumni networks pays dividends in terms of professional development.

Our best wishes accompany you!

Prof Wim de Villiers  
Rector and Vice-Chancellor

### Mthwali-sidanga we-Matie othandekayo

Siyavuyisana nawe ngesingqini-mfundo oza kuyifumana apha namhlanje. Wena ungumzekelo wobalasele ezamela wona le Yunivesithi yaseStellenbosch (SU). Sinebhongo ngawe!

Uyinxalenye yeqela elikhethekileyo kakhulu, kuba iYunivesithi ibhiyozela iKhulu layo leminyaka kulo nyaka. Ukuqalela kwiifakhalithi ezine, abafundi abangama-503 kunye nabasebenz abangabahlohi abangama-40 ngo-1918, i-SU namhlanje ilikhaya kwiifakhalithi ezili-10, uluntu olunamandla lwabafundi abangaphezulu kwama-30 000 kunye nabahlohi abangama-3 000, abathe tshitshilili kwiikhampasi ezintlanu kummandla.

Sibamba ngazo zozibini kuye wonke ubani oye wanceda ekubumbeni eli ziko waza waqinisa igama lalo lodumo njengeziko lezemfundo elikumgangatho wehlabathi. Kwangaxesha linye, i-SU iyazivuma izenzo zayo ezigwenxa zexesha eladlulayo. Sinokuzisola okunzulu ngako konke oku. Sixolisa ngokungazenzisiyo kwabo bathi bakhutshelwa ngaphandle kumalungelo awodwa ezembali eyathi yawaxhamla i-SU. Sikwanayo nembeko ngamazwi abalulekileyo e-Matie yelo xesha eyathi ayabi nako ukuvalwa umlomo nakubeni yayikhutshelwa ngaphandle isenziwa ikheswa. Kwakhona ngakuxanduva lwexesha langoku nelezizukulwana ezizayo, i-SU iyazibophelela kwingcinga yoqukwano, iyunivesithi ekumgangatho wehlabathi eAfrika nekwayeAfrika.

I-SU iya kuhlala ilikhaya lakho kwezemfundo. Nceda uhlale ulilungu lethu elikhutheleyo losapho lwe-Matie ngokuqhagamshelana nathi ngewebhusayithi yethu ye-alumni, amajelo eencoko kwakunye nemicimbi ye-alumni, ebanjwa rhoqo. Hlala uyazisa iofisi ye-alumni ([alumni@sun.ac.za](mailto:alumni@sun.ac.za)) ngeenkukacha zakho ukuze ukwazi ukufumana izimemo, iincwadi zeendaba kwakunye nemagazini yethu ye-alumni i-Matieland. Uphando lubonisile ukuba ukuzibandakanya kakhulu kuthungelwano lwe-alumni kuhlawula izabelo ngokwemiqathango yophuhliso lobungcali.

Iminqweno yethu emihle mayihambe nawe!

Njing Wim de Villiers  
INqununu noSekela-Tshansila

## Visie 2030

Ons sien die Universiteit Stellenbosch as 'n inklusiewe, innoverende en toekomsgerigte plek van ontdekking en uitnemendheid waar sowel personeel as studente denkleiers is wat tot diens van alle belanghebbers kennis bevorder.

## Missie

Ons streef om ons visie van die Universiteit Stellenbosch te verwesenlik deur volgehoue transformasie en, op ons ontdekkingsreis deur die akademie tot diens van ons belanghebbers, ondemeem ons om:

- 'n akademiese gemeenskap te skep waarin sosiale geregtigheid en gelyke geleenthede tot sistemiese volhoubaarheid lei;
- toepaslike en volhoubare benaderings tot Afrika-ontwikkeling te ondersoek en innoverend toe te pas;
- ons navorsing te rig volgens die volle spektrum uitdagings waarmee die wêreld, Afrika, ons land en die plaaslike gemeenskap te kampe het;
- student- en toekomsgerigte leer en onderrig, wat 'n passie vir lewenslange leer vestig, te handhaaf;
- in die innoverende akademieskap en kreatiewe vermoëns van al ons mense te belê;
- die inherente krag van diversiteit te ontgin; en
- sinergistiese netwerke te vestig en uit te bou, waarin die Universiteit 'n dinamiese vennoot is.

## Vision 2030

We see Stellenbosch University as an inclusive, innovative and future-focused place of discovery and excellence, where staff and students are thought leaders in advancing knowledge in service of our stakeholders.

## Mission

We strive to achieve our vision for Stellenbosch University through sustained transformation and, on our journey of discovery through academia in the service of our stakeholders, we have resolved to:

- create an academic community in which social justice and equal opportunities will lead to systemic sustainability;
- investigate and innovatively implement appropriate and sustainable approaches to the development of Africa;
- align our research with a wide-ranging spectrum of challenges facing the world, Africa, our country and the local community;
- maintain student-centred and future-oriented learning and teaching that establish a passion for lifelong learning;
- invest in the innovative scholarship and creative ability of all our people;
- leverage the inherent power of diversity; and
- establish and extend synergistic networks in which our University is a dynamic partner.

## Umbono 2030

Sibona iYunivesithi yaseStellenbosch njengendawo equkayo, yezinto ezintsha kunye negxile kwikamva yokufumana neyobalasele, apho abasebenzi nabafundi baziinkokheli abanegunya nabaziingcaphephe ekwandiseni ulwazi kwinkonzo yabathathi-nxaxheba bethu.

## Umsebenzi

Sizama ukufikelela kumbono wethu ngeYunivesithi yaseStellenbosch ngenguquko ezinzileyo kwaye, ngohambo lwethu lokufumana ngemfundo kwinkonzo yabathathi-nxaxheba bethu, sikuxazulule:

- ukudala uluntu lwezemfundo ekulapho ubulungisa bezentlalo kunye namathuba alinganayo aya kukhokelela kwinkqubo yozinzo;
- ukuphanda nokuphumeza ngezinto ezintsha iindlela ezifanelekileyo nezinozinzo kuphuhliso lweAfrika;
- ukulungelelisa uphando lwethu kunye noluhlu olubanzi lwemingeni ejongene nehlabathi, iAfrika, ilizwe lethu kwakunye noluntu lwasekuhlaleni;
- ukulondoloza ukufunda nokufundisa okugxile kumfundi nokujonge kwikamva okumisela uthando lokufunda kubomi obude;
- ukwenza inzuzo kubufundi bokuvelisa izinto ezintsha kunye nobuchule obuyilayo babo bonke abantu bethu;
- ukuxhathisa amandla akhoyo okungafani; kwakunye
- nokumisela nokwandisa uthungelwano oluhlangeneyo ekulapho iYunivesithi yethu ingumlingane onamandla.

## Kanselier | Chancellor

Dr JP Rupert, DCom hc (Stell), DCom hc (NMMU)

## Rektor en Visekanselier | Rector and Vice-Chancellor

Prof WJS de Villiers, MB, ChB, MMed (Int), FCP (SA), DPhil, MHCM

## Voorsitter van die Raad | Chairperson of Council

Mr GM Steyn, BA, LLB

## Uitvoerende Bedryfshoof | Chief Operating Officer

Prof SA du Plessis, BComHons, MPhil, PhD

## Viserektor (Sosiale Impak, Transformasie en Personeel)

## Vice-Rector (Social Impact, Transformation and Personnel)

Prof NN Koopman, BA, MTh, DTh

## Viserektor (Leer en Onderrig) | Vice-Rector (Learning and Teaching)

Prof A Schoonwinkel, PrEng, MEng, MBA, PhD

## Viserektor (Navorsing, Innovasie en Nagraadse Studies)

## Vice-Rector (Research, Innovation and Postgraduate Studies)

Prof TE Cloete, MSc, DSc

## Viserektor (Strategie en Internasionalisering) | Vice-Rector (Strategy and Internationalisation)

Prof HC Kloppe, BCur, MCur, PhD, MBA, FAAN, MASSAf

## Registrateur | Registrar

Dr P Retief, MA, DLitt

## Dekane | Deans

AgriWetenskappe | AgriSciences

Prof D Brink, BScHons, MScAgric, PhD

Ekonomiese en Bestuurswetenskappe | Economic and Management Sciences

Prof DJ Malan, MA, DPhil

Geneeskunde en Gesondheidswetenskappe | Medicine and Health Sciences

Prof JA Volmink, BSc, MB, ChB, DCH (SA), MPH, DPhil, MASSAf

Ingenieurswese | Engineering

Prof JL van Niekerk, MEng, PhD, EMBA

Krygskunde | Military Science

Prof MS Tshehla, MSc, PhD

Lettere en Sosiale Wetenskappe | Arts and Social Sciences

Prof AJ Leysens, MA, DPhil

Natuurwetenskappe | Science

Prof L Warnich, MSc, PhD

Opvoedkunde | Education

Prof Y Waghid, BA, HDE, MEd, DEd, PhD, DPhil (Waamemend/Acting)

Regsgeleerdheid | Law

Prof N Smit, BLC, LLB, LLD

Teologie | Theology

Prof RW Nel, BA, BTh, MTh, DTh

## Interessante van die plegtighede

Die prosesie, almal in akademiese drag, word so opgestel dat die mees junior lede eerste instap, maar die mees senior lid (gewoonlik die Kanselier of Visekanselier) lei die prosesie uit ná die plegtigheid.

By middeleeuse universiteite was die *cappa clausa*, 'n moulose mantel wat bo-oor 'n toga gedra is, die eerste vorm van akademiese drag. In die 16de eeu het Oxford en Cambridge weggedoen met die mantel en het akademiese drag bestaan uit die toga met moue, 'n kap met 'n lang 'stert' om die skouers en 'n hooftoisel. Streng riglyne het die ontwerp en kleure van akademiese drag bepaal. Hierdie tradisie het dus uit Europa oorgespoel na Suid-Afrika. Om ook erkenning te gee aan die Universiteit Stellenbosch se rol as integrale deel van die Afrika-vasteland, is die ampsdraers se togas herontwerp en met eenvoudige Afrika-motiewe geborduur.

Die taal verryk ook hierdie seremonie met interessante terme. Graduandi (persone wat op die punt staan om 'n graad te ontvang) stap met 'n kap oor die arm na die verhoog. Sodra die graad toegeken is, word die kap om die skouers van die graduati (persone wat pas 'n graad ontvang het) gehang. U kan elke fakulteit se kandidate uitken aan die kleur van die eerste graad se kap. Die honneursgraad se kap het 'n dubbele streep, die magistergraad s'n is swart met 'n geel satynvoering en die doktorsgraad s'n is maroen met geel satyn binne. Kandidate wat doktorsgrade ontvang, dra rooi togas.

Nuwe alumni kan gerus die alumni se webwerf, [www.matiesalumni.com](http://www.matiesalumni.com), dophou vir interessante nuus en konvokasievergaderings.

## Interesting ceremonial details

The procession, wearing academic dress, is set up so that the junior members walk in first, although the most senior member (usually the Chancellor or Vice-Chancellor) leads the procession out after the ceremony.

The *cappa clausa*, a sleeveless cloak that was worn over a toga, was the first form of academic dress in mediaeval universities. Oxford and Cambridge got rid of the cloak in the 16th century and academic dress then consisted of a toga with sleeves, a hood with a long 'tail' around the shoulders and a headdress. Strict guidelines determined the design and colours of academic dress. This tradition therefore came to South Africa from Europe. So as to acknowledge the role played by Stellenbosch University as an integral part of the African continent, the togas of the office-bearers were redesigned and embroidered with simple African motifs.

The language used also enriches the ceremony with interesting terms. Graduands (people who are on the point of receiving a degree) walk to the stage with the hood draped over their arm. As soon as the degree has been conferred, the hood is draped around the shoulders of the graduates (people who have just been awarded a degree). The candidates of the various faculties can be recognised by the colour of the hood for the first degree. The hood for an honours degree has two stripes, while that for a master's degree is black with a yellow satin lining. The hood for a doctorate is maroon with a yellow satin lining, while candidates receiving doctorates wear red togas.

New alumni should keep an eye on the alumni website, [www.matiesalumni.com](http://www.matiesalumni.com), for interesting news and information about convocation meetings.

## Inkcukacha enomdla malunga nemisitho

Umkhosi wemithika, onxibe umthika wemfundo, wenziwe ngohlobo lokuba amalungu asematsha ahambe kuqala, nangona elona lungu liphezulu kakhulu (lidla ngokuba yiTshansila okanye okanye liSekela-Tshansila) likhokela umkhosi wemithika ukuphuma emva komsitho.

I-*cappa clausa*, isambatho esingenamikhono esasinxitywa ngaphezu kwesinxibo somsitho (i-toga), sasiluhlobo lokuqala lesinxibo somthika wemfundo kwiyunivesithi zamandulo. I-Oxford ne-Cambridge yahlukana neso sambatho kwinkulungwane ye-16 nomthika wemfundo owawunesinxibo esinemikhono, umxakatho 'onesisila' eside emagxeni nesinxibo sasentloko. Yimiyalelo engqongqo emiselwe uyilo nemibala yomthika wemfundo. Esi sithethe ngoko seza eMzantsi Afrika sisuka emaNtla. Ukuze sothulele umnqwazi iYunivesithi yaseStellenbosch ngendima eyidlalileyo njengxenye egqibeleleyo yelizwekazi laseAfrika, izinxibo zomsitho (ii-toga) zamagosa olawulo zaphinda zayilwa ngokutsha zahonjiswa ngeemihombiso yesiAfrika.

Ulwimi olusetyeziswayo nalo luchumisa umsitho ngamagama enza umdla. Abathweswa izidanga baya eqongeni bethe bhije imixakatho ezingalweni zabo. Sakuba sinikeziwe isidanga, umxakatho uthiwa hatya emagxeni abo banikezwe izidanga. Abathweswa izidanga beefakhalithi ezahlukeneyo bangabonwa ngombala womxakatho kwisidanga sokuqala. Umxakatho wesidanga seeonazi unemigca emibini, ngelixa owesidanga semastazi umnyama unomaleko otyheli wesatini. Umxakatho wesidanga sobugqirha umaruni unomaleko otyheli wesatini, ngelixa abathweswa izidanga zobugqirha nabo benxiba izinxibo zomsitho ezibomvu.

Abo bangabathwali-zidanga abatsha bamelwe kukuqwalasela kwiwebhusayithi yabo babesakuba ngabathwali-zidanga (alumni), [www.matiesalumni.com](http://www.matiesalumni.com), ukufumana iindaba ezinika umdla kunye nenkcukacha emalunga neentlanganiso zekhonvokheyishini.

## Diploma- en Gradeplegtighede | Diploma and Graduation Ceremonies

### 1. 19 Maart | March 2018 (17:00)

#### Eregrade | Honorary Degrees

|                                |    |
|--------------------------------|----|
| Patrice Tlhopane Motsepe ..... | 10 |
| Jannie Mouton .....            | 11 |

#### Fakulteit Ekonomiese en Bestuurswetenskappe Faculty of Economic and Management Sciences

|                                 |    |
|---------------------------------|----|
| Doktorsgrade   Doctorates ..... | 12 |
|---------------------------------|----|

|  |    |
|--|----|
| Ander kwalifikasies   Other qualifications ..... | 13 |
|--|----|

([NGDip (AktWet), NGDip (Bemark), NGDip (MIV/Vigsbestuur), BCom (ingesluit Regsgeleerdheid), HonsBCom, MCom, MPhil, PhD (Stellenbosch)])

[PGDip (Act Sc), PGDip (Marketing), PGDip (HIV/Aids Management), BCom (including Law), BComHons, MCom, MPhil, PhD (Stellenbosch)]

### 2. 20 Maart | March 2018 (10:00)

#### Eregrade | Honorary Degrees

|                                |    |
|--------------------------------|----|
| Musa W Dube .....              | 22 |
| Thabo Cecil Makgoba .....      | 23 |
| Trueman Thandabantu Goba ..... | 24 |

#### Fakulteit Teologie | Faculty of Theology

|                                 |    |
|---------------------------------|----|
| Doktorsgrade   Doctorates ..... | 25 |
|---------------------------------|----|

|  |    |
|--|----|
| Ander kwalifikasies   Other qualifications ..... | 31 |
|--|----|

#### Fakulteit Ingenieurswese | Faculty of Engineering

|                                 |    |
|---------------------------------|----|
| Doktorsgrade   Doctorates ..... | 27 |
|---------------------------------|----|

|  |    |
|--|----|
| Ander kwalifikasies   Other qualifications ..... | 32 |
|--|----|

### 3. 20 Maart | March 2018 (17:00)

#### Eregrade | Honorary Degrees

|                              |    |
|------------------------------|----|
| Peter Anthony Jones .....    | 38 |
| André E Nel .....            | 39 |
| Imtiaz Ismail Sooliman ..... | 40 |

#### Fakulteit AgriWetenskappe | Faculty of AgriSciences

|                                 |    |
|---------------------------------|----|
| Doktorsgrade   Doctorates ..... | 41 |
|---------------------------------|----|

|  |    |
|--|----|
| Ander kwalifikasies   Other qualifications ..... | 48 |
|--|----|

#### Fakulteit Geneeskunde en Gesondheidswetenskappe Faculty of Medicine and Health Sciences

|                                 |    |
|---------------------------------|----|
| Doktorsgrade   Doctorates ..... | 45 |
|---------------------------------|----|

|  |    |
|--|----|
| Ander kwalifikasies   Other qualifications ..... | 50 |
|--|----|

1

19 Maart | 19 March

17:00

## Fakulteit

### *Ekonomiese en Bestuurswetenskappe*

*NGDip (AktWet), NGDip (Bemark), NGDip (MIV/Vigsbestuur), BCom (ingesluit Regsgeleerdheid),  
HonsBCom, MCom, MPhil, PhD (Stellenbosch)*

## Faculty

### *Economic and Management Sciences*

*PGDip (ActSc), PGDip (Marketing), PGDip (HIV/Aids Management), BCom (including Law),  
BComHons, MCom, MPhil, PhD (Stellenbosch)*

# 1

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## PROGRAM

- Staan asseblief* 1. Akademiese prosesie kom die saal binne.
- Staan asseblief* 2. Sing van die Nasionale Lied (kyk aan die binnekant van die agterblad).
- Sit asseblief* 3. Konstituering deur die Viserektor.
4. Verwelkoming deur die Viserektor en prof X Simon.
5. Voorstelling van die eredoktorandi en toekenning van die eregrade deur die Viserektor.
6. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Viserektor.
7. Sluiting deur die Viserektor.
- Staan asseblief* 8. Akademiese prosesie verlaat die verhoog.

## PROGRAMME

- Stand please* 1. Entrance of academic procession into the hall.
- Stand please* 2. Singing of the National Anthem (see inside back cover).
- Sit please* 3. Congregation formally constituted by the Vice-Rector.
4. Welcome by the Vice-Rector and Prof X Simon.
5. Presentation of the candidates for the honorary doctorates and conferment of the degrees by the Vice-Rector.
6. Presentation of candidates receiving qualifications by the dean of the faculty and conferment of qualifications by the Vice-Rector.
7. Closing by the Vice-Rector.
- Stand please* 8. The academic procession leaves the stage.

## EREGRADE | HONORARY DEGREES

*Die graad Doktor in die Handelswetenskappe (DCom), honoris causa, aan  
The degree Doctor of Commerce (DCom), honoris causa, to*

### PATRICE TLHOPANE MOTSEPE

vir sy besondere entrepreneursvernuif en innoverende sake-praktyke, sy voorbeeld van verantwoordelike korporatiewe burgerskap, etiek en verantwoordbaarheid, en sy onbaatsugtige steun vir lewensbelangrike sake in Suid-Afrika, Afrika én die wêreld om armoede, werkloosheid, ongeletterdheid en siekte te bestry.

Patrice Tlhopane Motsepe, stigter van African Rainbow Minerals (ARM), is nie net 'n sakeman van formaat nie, maar ook 'n voorbeeld van verantwoordelike korporatiewe burgerskap deur met maatskaplike beleggings minderbevoorregtes se lewens te verbeter.

Sy sakeprestasies is fenomenaal, waaronder die stigting van Future Mining en later African Rainbow Minerals Gold, 'n suksesvolle samesmelting met Harmony, wat uiteindelik tot 'n samesmelting met Anglovaal Mining lei. Sedert 2004 is Motsepe uitvoerende voorsitter van ARM en terselfdertyd lid van verskeie direksies, rade en verenigings, waaronder Sanlam, die Wêreld Ekonomiese Forum (WEF) se internasionale sakeraad en die Harvard-wêreldadviesraad.

Tog strek sy bydrae tot die samelewing veel verder as sake. As die eerste familie in Afrika om aan te sluit by die Giving Pledge – Bill Gates en Warren Buffet se uitdaging aan die wêreld se rykes om aan die armes te gee – belofte die Motsepes om 'n helfte van die opbrengs op hulle familiebates aan arm mense te skenk. Patrice doen daardie belofte deur die Motsepe-stigting gestand. Sedert 2013 is \$50 miljoen aan verdienstelike projekte toegeken. Internasionaal konsentreer hulle op navorsing vir 'n geneesmiddel vir MIV/vigs en kanker, natuurbewaring en omgewingsbeskerming. In Afrika het hulle onlangs Ebola help bestry deur ruim skenkings aan geaffekteerde lande en die Afrika-unie. Plaaslik beywer die stigting hom onder meer vir onderwys en leierskap, en staan 1 100 beurse van altesaam R100 miljoen vir tersiêre studie toe. Motsepe is ewe aktief as ondersteuner van sport, musiek en kuns, godsdienstige en nieregeringsorganisasies, en vrouesake.

Sy prestasies is al wyd erken, opmerklik ook deur sy portuur: Die uitvoerende hoofde van die voorste 100 maatskappye in Suid-Afrika het hom in 2002 as sakeleier van die jaar aangewys. Ander eerbewyse wat van sy omvangryke impak getuig, is die WEF-prys as wêreldleier van die toekoms, die Afrikaanse Handelsinstituut se MS Louw-prys vir voortrefflike sakeprestasies, die SA Jewish Report se spesiale direksieprys, en die BRICS-sakeraad se toekenning vir uitnemende leierskap.

Patrice Motsepe vergestalt etiese en verantwoordbare sake- en gemeenskapsleierskap wat die Universiteit Stellenbosch se hoogste eerbewys verdien.

for his exceptional entrepreneurial skill and innovative business practices, for being a model of responsible corporate citizenship, ethics and accountability, and for selflessly supporting life-changing causes in South Africa, Africa and the world, combating poverty, unemployment, illiteracy and disease.

Patrice Tlhopane Motsepe, founder of African Rainbow Minerals (ARM), is not only a businessman of note, but also a trailblazer for responsible corporate citizenship, using social investments to improve the lives of the poor.

His business accomplishments are vast, including founding Future Mining and later African Rainbow Minerals Gold, a successful merger with Harmony, which led to a merger with Anglovaal Mining. Along with being ARM executive chairperson since 2004, Motsepe is a member of various boards, councils and associations, including Sanlam, the World Economic Forum (WEF) International Business Council and the Harvard Global Advisory Council.

But Motsepe's contribution to society goes far beyond business. The first family in Africa to join the Giving Pledge – Bill Gates and Warren Buffet's challenge to the world's haves to give to the have-nots – the Motsepes vowed to donate half the funds generated by their family assets to the poor. Through the Motsepe Foundation, Patrice has lived up to that promise. Since 2013, \$50 million have been allocated to deserving projects. Key global focuses include research for an HIV/Aids and a cancer cure, nature conservation and environmental protection. In Africa, they recently helped fight Ebola through generous donations to affected countries and the African Union. Locally, a prominent focus is education and leadership, having allocated 1 100 bursaries totalling R100 million towards tertiary studies. Motsepe is equally active supporting sport, music and art, religious and non-governmental organisations, and women's affairs.

Motsepe's achievements have been widely acknowledged, notably by his peers: In 2002, the CEOs of South Africa's top 100 companies voted him business leader of the year. Other accolades attesting to his extensive impact include the WEF Global Leader of Tomorrow award, the Afrikaanse Handelsinstituut MS Louw award, the SA Jewish Report special board members' award, and the BRICS Business Council outstanding leadership award.

Patrice Motsepe personifies ethical and accountable business and community leadership worthy of Stellenbosch University's highest honour

*Die graad Doktor in die Handelswetenskappe (DCom), honoris causa, aan  
The degree Doctor of Commerce (DCom), honoris causa, to*

### JANNIE MOUTON

vir sy ongeëwenaarde visie en sakevernuif, sy veerkragtigheid en volharding, sy bydrae tot die Suid-Afrikaanse ekonomie en samelewing, en sy onbaatsugtige belegging in onderwys van gehalte vir huidige en toekomstige geslagte, waarmee hy volgehoue uitnemendheid by sy alma mater ondersteun.

Afgesien van sy reputasie as een van die suksesvolste sakelui wat die land tot nog toe opgelewer het, belê Universiteit Stellenbosch- (US-) alumnus Jannie Mouton ruimhartig in huidige en toekomstige geslagte se opvoeding.

Hierdie gekwalifiseerde geoktrooieerde rekenmeester, wat oor die grade BCom en HonsBCom (Ekonomie) beskik, word in 1982 medestigter en besturende direkteur van Senekal Mouton & Kitshoff, wat later by die beursnotering van onder meer RMBH, M-Net, Naspers en Richemont betrokke sou wees. Tog neem sy lewe 'n onvoorsiene wending toe die firma hom in 1995 afdank. Mouton – die toonbeeld van selfgedreweheid – gebruik sy ontslag as 'n geleentheid om te besin. Dit word die stukrag wat hom later daardie jaar die beleggingsreus PSG Groep laat stig deur op 48-jarige ouderdom die beherende aandeel in die destydse PAG te verkry. Ná 'n beskeie begin bou dié seun van 'n winkelier die PSG Groep – 'n maatskappy wat in finansiële dienste, bankwese, privaat aandele, landbou en onderwys belê – uit tot waar dit deesdae 'n saamgestelde opbrengs van bykans 50% per jaar aan aandeelhouders voorsien en met bates en markkapitalisasie van meer as R50 miljard spog.

Maar sy uitsonderlike sukses ten spyte, bly Mouton terdeë bewus van sy verantwoordelikheid om terug te gee. In 2007 skenk hy persoonlik 100 000 PSG-aandele aan die US, en 'n verdere 100 000 deur die PSG Groep. Die opbrengs op hierdie aandele van R50 miljoen word vir lening- en beurssteun vir verdienstelike studente gebruik. Daarbenewens skenk Mouton in 2016 weer R50 miljoen vir die US se nuwe Leer- en Ondernigsentrum. Die sentrum, waarvan die eerste sooi vroeër vanjaar gespit is, sal US-studente 'n hipermoderne leer- en ondernigomgewing bied.

Hierdie vereerde sakemagnaat en filantroop se werk is al met vele toekennings bekroon, waaronder die prys vir Wes-Kaapse Sakeleier van die Jaar, die All Africa-sakeleiersprys en die Ernst & Young-toekenning vir lewenslange prestasie.

Jannie Mouton, 'n leier op sy gebied en diensbaar aan die samelewing, vergestalt ál die kenmerke van 'n US-gegradueerde. Ons verleen graag ons hoogste eerbewys aan hom.

for his unparalleled vision and business sense, his resilience and perseverance, his contribution to the South African economy and society, and for unselfishly investing in quality education for current and future generations, thereby assisting his alma mater to maintain its momentum of excellence.

In addition to being among the most successful businesspeople this country has ever produced, Stellenbosch University (SU) alumnus Jannie Mouton generously invests in current and future generations' education.

Holding the degrees BCom and BCom Honours (Economics), the qualified chartered accountant in 1982 became co-founder and managing director of Senekal Mouton & Kitshoff, which would later be involved in the listing of RMBH, M-Net, Naspers and Richemont. Yet his life took an unforeseen turn when the firm dismissed him in 1995. Highly driven since childhood, this son of a shopkeeper used the dismissal as an opportunity to reflect. This provided the impetus for his founding of investment giant PSG Group later that year by acquiring, at the age of 48, the controlling interest in what was then PAG. From humble beginnings, the PSG Group – a financial services, banking, private equity, agriculture and education investment company – today generates a compound return of almost 50% per year for its shareholders and boasts assets and market capitalisation of over R50 billion.

But despite his phenomenal success, Mouton remains acutely aware of his responsibility to give back to society. In 2007, he personally donated 100 000 PSG shares to SU, and another 100 000 via the PSG Group. The returns on the R50 million's worth of shares are used for loan or bursary support for deserving students. In 2016, Mouton again donated R50 million towards SU's new Learning and Teaching Centre. With the sod-turning ceremony hosted earlier this year, the centre will offer SU students a cutting-edge learning environment.

This much-admired business tycoon and philanthropist's work has garnered awards such as the Western Cape Business Leader of the Year award, the All Africa Business Leaders award and the Ernst & Young lifetime achievement award.

A leader in his field and in service of society, Jannie Mouton embodies all Stellenbosch University's graduate attributes. We are proud to bestow on him our highest honour.

*Fakulteit Ekonomiese en Bestuurswetenskappe  
Faculty of Economic and Management Sciences*

**Doktor in die Wysbegeerte  
Doctor of Philosophy**

**BINGE, Laurie Herman (Economics)**

*Methods for aggregating microeconomic data: Applications to art prices, business sentiment and historical commodity prices*

This dissertation demonstrated methods for overcoming challenges in aggregating relatively large microeconomic datasets to estimate macroeconomic time-series indicators. These aggregation challenges relate to (i) estimating quality-adjusted price indices for unique and infrequently traded items (such as art), (ii) developing aggregate measures of sentiment and uncertainty based on the disparate qualitative survey responses of a large number of respondents and (iii) estimating complete price indices from incomplete historical records. In some cases, these methods were applied to the South African setting for the first time. These aggregation methods will prove useful in a variety of other settings that present similar challenges.

*Supervisor: Prof WH Boshoff*

**FUNGO, Emmanuel (Transport Economics)**

*Road infrastructure improvement for efficient utilisation of the agricultural potential: A case study of Morogoro, Tanzania*

Conventional road economic evaluation tools do not consider the increase in agriculture production due to the improvement of roads. In actual fact, rural road improvement and improved accessibility may have a substantial impact on price and production of agricultural products. This research illustrated the impact of the road condition and trip distance on the transport price and transport cost of agricultural products and ultimately agriculture yield. Results show that transport price decreases as the trip distance increases, reflecting factors such as economies of distance. A reduction of the transport price displayed a positive impact on crop yield with an elasticity of -0.291. It was found that farms with access to the larger, more distant markets are associated with a higher crop yield. When comparing agricultural benefits and road user cost savings for low-volume rural roads, the results showed that agricultural benefits were roughly three times higher than road user cost savings. The research developed a low-volume rural road economic appraisal framework which takes into account agricultural benefits, the effect of the trip distance as well as the effect of transport price.

*Supervisor: Prof S Krygsmann  
Co-supervisor: Prof JH Nel*

**GWAINDEPI, Abel (Economics)**

*State building in the colonial era: Public revenue, expenditure and borrowing patterns in the Cape Colony, 1820–1910*

This dissertation presented and analysed patterns in the revenues, outlays and public debt of the Cape Colony from 1820 to 1910. It showed that the discovery of diamonds in the late 1860s acted as a spur for change in political and fiscal institutions. In tracing these effects, the dissertation made important contributions to the study of fiscal institutions in South Africa and the evolution of colonial states in the 19th century. It also informs debates about the effects of mineral resources on institutional development by highlighting the influence

of powerful interest groups on the fiscal policy priorities of the Cape government.

*Supervisor: Dr FK Siebrits  
Co-supervisors: Prof J Fourie and Dr L Gardner*

**LEACH, Lorette (Public and Development Management)**

*A framework for factoring citizen perceptions into local public service value systems to improve service quality*

Intensifying violent service protests represent unconventional political participation, indicating dissatisfaction with the way in which citizens' rights to essential public services are dealt with and their inability to substantively influence service value systems. High levels of public service outputs are not indicative of service needs satisfaction, but are convenient to use as performance indicators. This study examined how factoring citizens' service perceptions into local public value systems would address this shortcoming. The current omission of considering perceptions in public service value systems has created 'negative' public value and compels government to enhance dialogue with citizens through participatory monitoring and evaluative methods, thereby providing a constructive avenue for potential protesters to approach government.

*Supervisor: Prof APJ Burger*

**MUZA, Cuthbert (Public and Development Management)**

*An assessment of the relevance of environmental management accounting for sustainability in Zimbabwe's extractive industries*

Environmental management accounting (EMA) has major significance for companies with high environmental impacts. The aim of this study was to assess the current and potential relevance of environmental management accounting in Zimbabwe's mining sector and extractive industries. The research was guided by questions aimed at understanding whether EMA actually or potentially contributes to the sustainability of the mining sector and whether EMA systems contribute positively towards sustainability better than traditional accounting systems. The research findings indicate that EMA indeed contributes positively to promoting sustainability in the mining sector, but the use of EMA is at entry level with random application. To address this, the researcher showed how companies can be made more aware of material flow cost accounting using physical and monetary environmental management accounting systems.

*Supervisor: Prof APJ Burger*

**NYAWO, Mike (Economics)**

*Micro-price adjustment to the new currency system in Zimbabwe*

This dissertation examined the adjustment of prices with the introduction of the new currency system in Zimbabwe and the end of hyper-inflation. Using a much disaggregated data set, the dissertation investigated the price adjustment process, mechanisms through which this adjustment occurred and sources of price stickiness. In conclusion a novel natural experiment – the introduction of bond coins – was used to investigate how the face value of a currency can affect price stickiness, and in turn have an impact that varies across income distribution.

*Supervisor: Prof N Rankin*

*Fakulteit Ekonomiese en Bestuurswetenskappe  
Faculty of Economic and Management Sciences*

**Nagraadse Diploma in MIV/Vigsbestuur  
Postgraduate Diploma in HIV/Aids Management**

Acho, Nelson Nsuh  
Agbesi-Badzi, Martin  
Alberto, Mario Nghipitwakomesho  
Alobwede, Vivian Ebami  
Amakali, Selma Ndangi  
Ampueja, Jefta Moses  
Angula, Alvina Tuyoleni  
Angula, Elina Nekefo Ngondyodhi  
Apollis, Quinton Basil  
Aupindi, Martha KASHUUDHIKWA  
Baatjies, Donovan Clarence  
Badenhorst, Motseokae Revelation  
Baleni, Dikeledi Emily  
Baloyi, Hlopheka Enos  
Banda, Steve Chiposa  
Bareki, Peter  
Bontsa, Chwayita Sinxolo  
Booi, Roeleen Isabella  
Bosch, Zama Fortunate  
Chamwadoro, Rangarirai Simon  
Chitombo, Lear Saiso  
Cholimpira, Grace Chisomo  
Claassens, Chantelle  
Dinake, Amos Tiro  
Dlamini, Phumelele Jennifer  
Dlelana, Dalubuhle Martin  
Doboch, Mitiku Ashoro  
Edward, Gabriel  
Edward, Nancy Oganeditse  
Faleni, Cordelia  
Festus, Hilya Niiita Naambo  
Gakkhar, Sudhir Kumar  
Goba, Mbalenhle Pearl  
Goniwe, Anna Lungiswa  
Hailu, Robel  
Hambadi, Penomwameni  
Hardnek, Jennifer  
Hlabano, Clarence Buyisile  
Hlangabezo, Faniswa  
Hlophe, Nelisiwe Grace  
Iileka, Ndamono Nahenda  
Iitula, Aina Mekondjo  
Iruedo, Hope Jesuseme  
Ismail, Shameema  
Joka, Cynthia Lindeka  
Josef, Thomas  
Juggemath, Yentl Munmohan  
Jzike, Ibeneme Lilian Nkechi

Kabongo, Elyse Panta Kamona  
Kambale, Jeannot Mafutamingi  
Kanime, Ruben Shaanika  
Kaonde, Eusteria Mwaka  
Kariwo, Eunah Namangolwa  
Keikantseng, Stanley  
Kgatla, Mmatswele Hellen  
Kgotlaetsile, Joyce Neo  
King, Alice Ayanda Kayakazi  
Kisare, Michelle  
Klauze, Jean Jacques Kalamba Mangole  
Kooper, Mathilde Antoinette  
Kunene, Matshidiso Jacqueline  
Lekwe, Mandisa Nontuthuzelo Pearl  
Lesoli, Palesa Paulina Teboho  
Letlhaku, Moeti Ignatius  
Lulendo, Weko Gome  
Mabhena, Nhlanhla  
Macuphe, Nontuthuzelo  
Madwanya-Ndobe, Nokuzola Eudocia  
Madzokere, Patsva Adelaide  
Mafuwa, Edgar Ngondidzashe  
Makara, Mpaki Odilon  
Makaula, Thandokazi  
Makhaye, Thabisile Prisca Princess  
Makhetha, Molemo Charles  
Mako, Tsepo  
Makopo, Matshidiso Gladys  
Makua, Makgale David  
Mandimika, Chiedza  
Mangena, Nomandaba Precious  
Manyisane, Nokuzola  
Maphumulo, Bawinile Precious  
Mataranyika, Mary Nyaradzayi  
Mathose, Tabitha Tasunungurwa  
Matundu, Mberimuna Chantel  
Mbadhi, Elago Petrus  
Mboweni, Johanna Mapule  
Mcanjana, Ntombomzi  
Mdadane, Nelisiwe Goodness  
Mdaka, Vongani Dezzie  
Mdlalose, Gcinekile Fihliwe  
Mere, Reabetswe Aobakwe  
Mjojo, Lucy Linda  
Mmekwa, James  
Mnisi, Katekani Floyd  
Moabi, Ralph  
Mogatle, Mercy Masego  
Mohlabane, Sebonoang-Lydia  
Mokgatlang, Mphoentle Lebang

Mothiba, Samuel Ropane  
Mpesela Mariti, Marethabile Nthabiseng  
Mpofu, Tariro Ann-Maureen  
Msuseni, Wendy Lungiswa  
Mtana, Babalwa Christina  
Mthombeni, Vusumuzi  
Mthonti, Samkelisile Precious  
Mtolo, Sthabile Wendy  
Mtshali, Nompumelelo  
Mukundwi, Juliana  
Mutapanduwa, Susanna  
Mutetwa, Monica  
Mutirikwi, Givemore  
Ndhlovu, Samson  
Ndlovu, Melusi  
Ndzamela, Oko Jamilla  
Ngcuthushe, Jongabantu  
Ngema, Makhosi Sihle  
Nghitoolwa, Mirjam Elika Nangula Ndafapawa  
Ngiwaza, Nombulelo  
Ngomane, Lindiwe Fortunate  
Nkomo, Mamele  
Nsibande, Nongcebo Fortunate  
Ntombela, Makhosazane Promise  
Ogbeiw, Lucky  
Phala, Puleng Stephen  
Phiri, Beauty  
Phohlela, Nomsa Audrey  
Poki, Motselisi Rose  
Prins, Megan Martha  
Raboko, Ramabanta Alphonci  
Rala, Siphokazi  
Ramalepe, Lebogang Manthibe  
Rapulana, Modiehi Annah  
Salumu, Kambobya  
Samuel, Thembakazi  
Setlhapelo, Arthur Bakang  
Shabalala, Nelani Norah  
Shekutamba, Victoria Sindano  
Sibiya, Thobekile Rose  
Simelane, Thobile Sharon  
Sotomela, Khayakazi Debra  
Sterling, Patricia Ann  
Stofile, Catherine Nolukholo  
Strauss, Irene Carol  
Tafa, Phatsimo Khetsiwe  
Thero, Malebogo  
Tsimanyane, Pelonomi Theresa  
Waghid, Sihan  
Watema, Kagiso Felicity  
Xabanisa, Sibulelo Nkosana

Xulashe, Nomvuyiso  
Zibani, Nonsikelelo Theodora  
Zigebe, Babalwa

**Nagraadse Diploma in MIV/Vigsbestuur *Cum Laude***  
**Postgraduate Diploma in HIV/Aids Management *Cum Laude***

Haoses, Dia Leticia  
Mabuto, Constantine  
Zimudzi, Ivim

**Baccalaureus in die Handelswetenskappe**  
**Bachelor of Commerce**

Adams, Amy  
Adams, Rosco  
Adendorff, Je-Hann David Franco  
Adonis, Wesley Edward  
Agulhas, Kayla Audrey-Marie  
Almeida, Dino Jorge  
Amunyela, Tulonga Magnaem Ndapuuza  
April, Ethan  
Amoldus, Sohail  
Austen, Gareth Wade  
Badenhorst, Dirk Streicher  
Badenhorst, Heleen  
Baderoen, Abdu-Shakoer  
Bailey, Gabriella  
Bailey, Melissa Lee  
Barbier, Brad  
Barnes, Leon Mario  
Basson, Jacques Philip  
Baum, Michaela  
Beckerling, Karl  
Bekker, Michael Danie  
Beneke, Simone  
Bensley, Sumaré  
Beukes, Jean  
Beukes, Kaylan Bianca  
Beukman, Elreza Chamone  
Blackburn, Bradley Franklin Kenneth  
Botes, Josef Johannes Jacobus  
Botha, Theo Burger  
Bouwer, Danae Elsabe  
Brand, Inneke Beatri  
Brenton, James  
Brettschneider, Kai-Uwe Albert  
Britz, Johannes Petrus  
Broughton, Amy Lee  
Brown, Keshia Lynn  
Brown, Kyla Beata  
Brummer, Ulrich  
Brussow, Chad Kyle  
Buitendag, Daniel  
Cele, Nosipho Neliswa  
Christians, Tamlyn  
Clark, Ryan Brandon Disston  
Cloete, Jana  
Coetzee, Jacobus Truter  
Coetzee, Lara

Coetzer, Louwrens Erasmus  
Coleman, David Peter  
Cones, Gray Richard Thornton  
Corbett, Seon Charmaine  
D'Offay, Taryn Ann  
Da Costa, Sasha-Lee  
David, Richard Donald  
Davids, Nadine Monique  
De Clippel, Maxime Philippe Rachel Michel  
De Koker, Mia  
De Lange, Adriaan  
De Villiers, Nicholas  
De Vos, Stephan  
Dewar, Ross Neal  
Dijo, Dithabe Anthony  
Drury, Kyle Nicolas  
Du Plessis, Jacobus Johannes Petrus  
Du Preez, Jaco Redelinghuis  
Du Toit, Alexis Christiaan  
Du Toit, Jean-Pierre Coetzer  
Du Toit, Johannes  
Du Toit, Stella Suzaan  
Duckitt, Christo Sinclair  
Duminy, Charl Henri  
Durr, Anna  
Edwards, Bryan Reece  
Ehlers, Nel  
Eichstadt, Brent Daniel  
Eigelaar, Jan-Louis  
Eigelaar, Quinta Sarah  
Eloff, Albertus Petrus Conradie  
Embling, Nicholas John  
Engelberts, Jason Eric  
Engelbrecht, Cornelius Johannes  
Erasmus, Remert  
Ewald, Matthias Johannes  
Faber, Tyrann  
Ferguson, Callum Munro  
Fieldgate, Mitchell Alan Leslie  
Forssman, Adrian Oscar  
Fouche, Megan Jess  
Fourie, Darryn  
Fourie, Hanri  
Gamiet, Sayed Thaakier  
Gawie, Micheila  
Gerber, Anya  
Gerber, Julie-Anne  
Gibson, Alexis  
Gilbey, Oliver James  
Glover, Shaun Michael  
Goosen, Rousseau Ruan  
Gouws, Sune  
Grant, Robert  
Greyling, Kristy Amy  
Groenewald, Martin Adriaan  
Gstettner, Markus  
Gunning, Wade Michael  
Haller, Meryn Caitlin

Hanly, Grace Alice  
Hardnick, Fernando Brendon Brain  
Harris, Charmone  
Havenga, Ruan  
Hay, Matthew Scott  
Hayward, Matthew Russell  
Heslop, Tyra Marianne  
Heydenrych, Matt Charles  
Hills Williams, Lois  
Hough, Ludolph Tobias  
Hulett, Rachel Robyn  
Huskisson, Chesney Gary  
Isaacs, Moegammad Azhar  
Jacobs, Brendan  
Jamieson, Claire  
Janse van Rensburg, André Thomas  
Jansen van Rensburg, Tiaan  
Jones, Jacquinn Ajay Clinto  
Kalipa, Ndileka Nyiko  
Kaps, Kesley Markus  
Kasumba, Chali Charles  
Kemp, Marelize  
Kgathla, Frank Mabatha  
Kiernan, Natalie Anne  
Kilian, Aidan Pierre  
King, Joshua Philip  
Kinghorn, Emma Frances  
Knoetze, Miancke  
Kobilski, Jessica Elizabeth  
Koegelenberg, Johanna Margaretha  
Koen-Volschenk, Vegardt  
Kriel, Nadine  
Lamprecht, Dylan Benjamin  
Lategan, Juan  
Laurie, Philip  
Le Roux, Christiaan Hugo  
Le Roux, Dawid Benjamin  
Le Roux, Eduard Hoepfner  
Leppan, Michaela  
Lloyd, Vincit-Lee  
Lotriet, Anika  
Loubser-Hattingh, Gordon  
Lourens, Byron  
Lourens, Kyle  
Louw, Jeneske Abigail  
Louw, Renate Jacolene  
Lubanga, Busiswa  
Ludik, Bianca  
Maasch, Alastair James  
Madale, Nkateko  
Maddison, Gian  
Makhosonke, Zizipho-Zamangwane Kunene Zinhle  
Malan, Annereen  
Malan, Geor Cillie  
Malan, Remu Regardt  
Marais, George Jacobus  
Mare, Elvis Nyasha  
Mazibuko, Beauty



Mc Donald, Murray George  
Mclaren, Elizabeth Augusta  
Mcmurchie, Andrew Lennox  
Mellander, Daniel  
Mendes, Daniela Sebastiana Coppla  
Meyers, Amaldene Elda  
Minnaar, Ian Cedric  
Minnaar, Johann Gabriel  
Mngeni, Vuyolwethu  
Mohamed, Dorothy  
Moir, Marc Richard  
Mokgethi, Lungelo  
Molefe, Thato Nhlakanipho Nkosingiphile  
Momberg, Jan Hendrik  
Mouton, Michael Pieter  
Naidoo, Anisha  
Naidoo, Charina Paderes  
Naude, Chandelle  
Naude, Jean  
Ndlovu, Siyabonga  
Ndou, Tondani Dakalo  
Nel, Jason Cornelis Johannes  
Nel, Kara  
Nel, Louis Jacob  
Newman, Megan Suenette  
Newton, Amber Donne  
Nunn, Aidan John  
Nyathi, Mvelo Somilangokutcha  
O'Donoghue, James Riley  
O'Sullivan, Caitlin  
October, Barry Arthur  
Oostenbrink, Nadia  
Oosthuizen, Johannes Frederik  
Pankhurst, Natanya  
Pasch, Joannes Gerardus Bartholomeus  
Patterson, Matthew Brett  
Pearson, James Trevor  
Petersen, Karen Beatrice  
Phillips, Paige  
Pienaar, Willem Schalk  
Pinkhard, Robert Carel  
Potgieter, Igmar  
Powell, Tarryn Elizabeth  
Pozzo, Jemma  
Pretorius, Anke  
Pretorius, Daniel Jacobus  
Pretorius, Willem Lodewikus  
Raath, Bastiaan Tsavo  
Rall, Anscha  
Rantsane, Nthabiseng Wilma  
Rautenbach, Michael Johan  
Ravy, Siddharth  
Rawoot, Abdul-Hamied  
Redelinghuys, Chris  
Reilly, Alexa  
Reilly, Patrick  
Rencken, Denelle  
Richter, Thea Helen

Riley, Dominique  
Rocher, Pascal Maria  
Roelofse, Bemo  
Roux, Marilize  
Rovelli, Francesca Olivia  
Rowlands, Jemma Leigh  
Sacks, Justin  
Sampson, Tarryn Jamie  
Saramago, Keith Khumo Moiloa  
Schlebusch, Jan-Louis  
Scholz, Christopher  
Schoonraad, Inys  
Scott, Ruben Alan  
Scott, Tamsin  
Scribante, Lorenzo Francesco  
Selebalo, Tumelo Seahle  
September, Raquel Merryl  
Shipena, Elly Eeno  
Sloane, Johnathan Nicholas Simon  
Small, Michael Ronald  
Smit, Andreas Martinus  
Smit, Erik  
Smit, Leané  
Smith, Hugo Johannes Kotze  
Smith, Lee-Thomas Malebyse  
Smuts, Jacobus Abraham  
Snyman, Pieter Comelius  
Steenkamp, Angela Kaye  
Stembridge, Nicholas Hylton  
Steyn, Carmen Bernice  
Strauss, Nicolaas Johannes  
Strydom, Jacobus Frederick Schoonraad  
Suzor, Justin Michel  
Swanepoel, Michael Dennis  
Theron, Jan-Hendrik Louis  
Theron, Lourens Johannes  
Tiffin, Julia Susan  
Tilley, Clement Henry  
Titus, David John  
Toüa, Tiaan Johannes  
Touw, Johanin Malcolm  
Troester, Zachary Alexander  
Truter, Andre-John  
Tucker, Nicole  
Twekye, Paul Twesigye  
Tyler, Matthew Graham  
Uys, Marais  
Van Baalen, Maria Catharina  
Van de Vyver, Deandi Aletta  
Van der Merwe, Emma  
Van der Merwe, Jenaé Maria  
Van der Merwe, Nicolaas Johannes  
Van der Riet, Mark Jeremy  
Van der Westhuizen, Jonathan  
Van der Zanden, Hema-Dette  
Van Jaarsveld, Christoffel Lombard  
Van Kets, Cameron Rik  
Van Kets, Michaela Anthea

Van Leeuwen, Rainer  
Van Niekerk, Johan Andreas  
Van Niekerk, Lomé  
Van Rensburg, Nina  
Van Rensburg, Sarel Stephanus  
Van Tonder, Jacques  
Van Wyk, Carel Pieter  
Van Zyl, Abraham Johannes  
Van Zyl, Ismani  
Veltman-Watson, Michael Sydney  
Venter, Salmon Pienaar  
Vergunst, Sarah  
Vermeulen, Nicolaas Comelius  
Vlok, Elri  
Wahl, Louis Inus  
Wessels, Marnia  
West, Anneke  
Weyer, Kelsey Lynn  
Weyers, Hubert Mulder  
Wiese, Lize-Marie  
Willemse, David-Leigh  
Williams, Jordan  
Williams, Keegan Grant  
Withers, Paul Arthur  
Wong, Sybil Sitong

#### **Baccalaureus in die Handelswetenskappe *Cum Laude* Bachelor of Commerce *Cum Laude***

Jaques, Shannon Lorna  
Linde, Christin  
Mtshali, Siziphiwe Sibongokuhle  
Rundle, Nicky

#### **Nagraadse Diploma in Finansiële Beplanning Postgraduate Diploma in Financial Planning**

Cozyn, Gamiem  
Dawood, Mumtaz  
Francis, Darren Jeffrey  
Jassiem, Mogamat Nezaam  
Khabo, Lebona  
Lee, Tracy Erica  
Ntisa, Akhona  
Pieterse, Karissa  
Swelindawo, Aphiwe  
Van der Westhuizen, Willem Marthinus Petrus  
Vassilev, Anthony

#### **Nagraadse Diploma in Finansiële Beplanning *Cum Laude* Postgraduate Diploma in Financial Planning *Cum Laude***

Faul, Beatri  
Leibowitz, Jaya

#### **Nagraadse Diploma in Bemarking Postgraduate Diploma in Marketing**

Tchucana, Tiyisela

#### **Nagraadse Diploma in Aktuariële Wetenskap Postgraduate Diploma in Actuarial Science**

Buchanan, Ian Douglas  
Hurst, Matthew James  
Lanz, Lauren Vicky  
Ncanga, Mzwandile Reginald

#### **Honneurs-Baccalaureus in die Handelswetenskappe Bachelor of Commerce Honours**

Bazola, Rosy Masiela (Bestuursrekeningkunde)  
Benade, Erik Delpont (Ondememingsbestuur: Strategie en Innovasie)  
Brown, Curtly Sean (Bestuursrekeningkunde)  
Burger, Ingrid (Bestuursrekeningkunde)  
Carruthers, Matthew Callum (Ekonomie)  
De Villiers, Catharina Christina (Aktuariële Wetenskap)  
Dharsey, Dean (Aktuariële Wetenskap)  
Du Plessis, Philip (Aktuariële Wetenskap)  
Duvenage, Gert Diederik Jacobus (Bestuursrekeningkunde)  
Fouche, Angelique (Bestuursrekeningkunde)  
Gausi, Thokozire (Ekonomie)  
Gouws, Jauné (Statistiek)  
Green, Liza (Aktuariële Wetenskap)  
Hanekom, Dedre (Aktuariële Wetenskap)  
Heiberg, Alexander Christian Hanrich (Ekonomie)  
Hirst, Peter Alexander (Ekonomie)  
Jacobs, Tian (Statistiek)  
Janse van Rensburg, Michelle (Bestuursrekeningkunde)  
Joubert, Gideon Jacobus (Bestuursrekeningkunde)  
Londt, Julian John Ambrose (Bestuursrekeningkunde)  
Loubser, Nicolas Tielman (Ondememingsbestuur: Strategie en Innovasie)  
Ludick, Georgia-Rae Piper (Ekonomie)  
Lunsche, Sasha (Ekonomie)  
Mabandla, Nokubonga (Menslikehulpbronbestuur)  
Mackay, Cindy Sybil (Aktuariële Wetenskap)  
Malan, Anieka (Ekonomie)  
Marais, Lara (Ekonomie)  
Martin, Lisa-Cheree (Ekonomie)  
Matthews, Rowan (Vervoereconomie)  
McEvoy, Callie Louise (Ekonomie)  
Mohapi, Manapo Eugenia (Ekonomie)  
Mokobane, Sechaba Tshepo (Ekonomie)  
Moliko, Ntsane Jeremia (Ekonomie)  
Mondlane, Bongimpilo Bandlie (Bestuursrekeningkunde)  
Mtizi, Carole Rairai (Vervoereconomie)  
Muller, Duane (Ekonomie)  
Musumba, Stacey (Statistiek)  
Mwale, Martin Limbikani (Ekonomie)  
Nel, Ruan (Bestuursrekeningkunde)  
Ngilande, Immaculate Nokukhanya Thobile (Logistieke Bestuur)  
Nigrini, Rayno (Finansiële Analise)  
Noble, Sian (Ekonomie)  
O'Ehley, Steven (Ekonomie)  
Patel, Primal Deepak (Ekonomie)  
Paterson, Sheldon Callum (Ekonomie)  
Pretorius, Jan Johannes Lodewicus (Bestuursrekeningkunde)  
Rabie, Janneke (Ondememingsbestuur: Bemarkingsbestuur)

Reddig, Jannes Andreas (Ekonomie)  
 Sadowski, Romuald Stanislaw (Aktuariële Wetenskap)  
 Schoeman, Stephanus Jurgens (Bestuursrekeningkunde)  
 Strauss, Jochiré (Bestuursrekeningkunde)  
 Tolobisa, Jorene Lungiswa (Bestuursrekeningkunde)  
 Van der Walt, Elise (Ekonomie)  
 Visagie, Wade Gareth (Bestuursrekeningkunde)  
 Watson, Megan Asleigh (Ekonomie)  
 Welz, Jason Morgan (Ekonomie)

**Honneurs-Baccalaureus in die Handelswetenskappe Cum Laude  
 Bachelor of Commerce Honours Cum Laude**

Caruthers, Bradley Callum (Ekonomie)  
 Hamman, Michael Andries (Ekonomie)  
 Hsu, Yin-Yin Katty (Ekonomie)  
 Liu, Xinman (Ekonomie)  
 Mackenzie, Onesmo (Ekonomie)  
 Nandago, Ruusa Nangula (Ekonomie)  
 Roux, Charlton Blake (Bestuursrekeningkunde)  
 Spanjaard, Matthew James (Bestuursrekeningkunde)  
 Wilken, Willem Johannes (Ekonomie en Wiskundige Statistiek)

**Magister in die Handelswetenskappe  
 Master of Commerce**

Adriaanse, Frederik Gideon (Logistieke Bestuur)  
 Baard, Pierre Stephan (Operasionele Navorsing)  
 Brynard, Chame Elaine (Bedryfsielkunde)  
 Changole, Prince Maziko (Ekonomie)  
 Coetzer, Frances (Wiskundige Statistiek)  
 Conyngham, Darren (Ekonomie)  
 Cunningham, Russell Neil (Bedryfsielkunde)  
 Dunn, Matthew (Ekonomie)  
 Esterhuysen, Jan Leeuwner Tertius (Ekonomie)  
 Greeff, Daniel Ross (Ekonomie)  
 Guse Janse van Vuuren, Carla (Ondememingsbestuur)  
 Hattingh, Catharina Johanna (Bedryfsielkunde)  
 Hoohlo, Bongani Gratitude (Ekonomie)  
 Jankie, Abongile Charles (Ekonomie)  
 Khoza, Simphiwe Siphesihle (Ekonomie)  
 Khumalo, Gculisile (Logistieke Bestuur)  
 Klein, Theo (Ekonomie)  
 Louw, Johannes Marthinus (Ekonomie)  
 MacDonald, Angus Coll Emerty (Ekonomie)  
 Norman, Ndileka (Ekonomie)  
 November, Eben David (Menslikehulpbronbestuur)  
 Nzomo, Salome (Ekonomie)  
 Pelser, Almeri (Ondememingsbestuur)  
 Putsoane, Tookho Simon (Ekonomie)  
 Rakubutu, Makubutu Christina (Ekonomie)  
 Ramela, Omphile Abel (Ekonomie)  
 Siwela, Samuel (Bedryfsielkunde)  
 Spammer, Zander (Landbou-Ekonomie)

Swart, Jennifer Elizabeth (Ekonomie)  
 Swiegers, Liezel (Ondememingsbestuur)  
 Thomas, Mari (Rekenaarouditering)  
 Van Rooyen, Elsona (Ekonomie)  
 Van Staden, Oaitse Sameeng (Bedryfsielkunde)  
 Van Tiddens, Charlotte Rykie (Ekonomie)  
 Viljoen, Jacobus (Finansiëlerisikobestuur)

**Magister in die Handelswetenskappe Cum Laude  
 Master of Commerce Cum Laude**

Burger, Irma Helena (Ondememingsbestuur)  
 Chemendy, Natascha (Logistieke Bestuur)  
 De Villiers, Engela (Ondememingsbestuur)  
 Knipe, Mienke (Vervoerekonomie)  
 Kotze, Chloe (Bedryfsielkunde)  
 McCallum, Stephen Ron (Ondememingsbestuur)  
 Pfitzinger, Johann (Ekonomie)  
 Rodseth, Tessa Louise (Statistiek)  
 Senekal, Bryce Evans (Kwantitatiewe Bestuur)  
 Van Biljon, Chloé (Ekonomie)  
 Walters, Ilani (Ekonomie)

**Magister in die Wysbegeerte  
 Master of Philosophy**

Dlamini, Khetsiwe Candy (MIV/Vigsbestuur)  
 Hamutoko, Frederika Nanghali Tweufilwa (MIV/Vigsbestuur)  
 Kabongo, Nkokeshla (MIV/Vigsbestuur)  
 Kangwe, Hendrina Taatsu Ndeyapo (MIV/Vigsbestuur)  
 Kuboya, Antoniette Petina (MIV/Vigsbestuur)  
 Lazarus, Nalinie (MIV/Vigsbestuur)  
 Le Roux, Neeltjie Christina (MIV/Vigsbestuur)  
 Mapeshoane, Mampoi Alice (MIV/Vigsbestuur)  
 Moalosi, Zibisani (MIV/Vigsbestuur)  
 Mohlabi, Tiisetso Constance (MIV/Vigsbestuur)  
 Molefe, Constance Mamaketekete (MIV/Vigsbestuur)  
 Mukange, Presley (MIV/Vigsbestuur)  
 Mungunda, Helena Wilhelmina (MIV/Vigsbestuur)  
 Ndlovu, Sibongile (MIV/Vigsbestuur)  
 Ntinjana-Mchunu, Bongiwé Patricia (MIV/Vigsbestuur)  
 Petersen, Nola Sharon (MIV/Vigsbestuur)  
 Phoolo, Calestus Phekane (MIV/Vigsbestuur)  
 Shoko, Nokuthula Michael (MIV/Vigsbestuur)  
 Simpokolwe, Moses (MIV/Vigsbestuur)  
 Thalagkale, Maubate Margaret Gloria (MIV/Vigsbestuur)  
 Tshisikamulilo, Azwifaneli (MIV/Vigsbestuur)

**Magister in die Wysbegeerte Cum Laude  
 Master of Philosophy Cum Laude**

Kobo Nona, Nicole (MIV/Vigsbestuur)  
 Lumbu, Ngongo (MIV/Vigsbestuur)

**Fakulteite**

*Teologie*  
*Ingenieurswese*

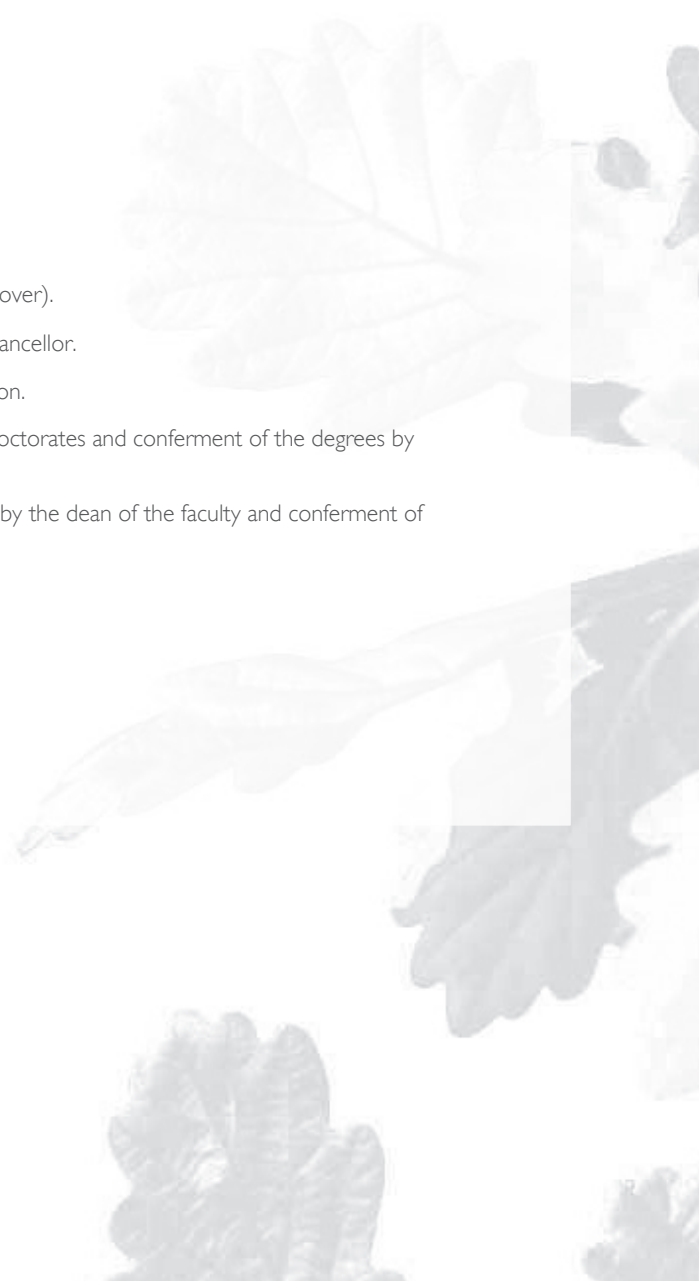
**Faculties**

*Theology*  
*Engineering*

## PROGRAM

- Staan asseblief* 1. Akademiese prosesie kom die saal binne.
- Staan asseblief* 2. Sing van die Nasionale Lied (kyk aan die binnekant van die agterblad).
- Sit asseblief* 3. Konstituering deur die Visekanselier.
4. Verwelkoming deur die Visekanselier en prof X Simon.
5. Voorstelling van die eredoktorandi en toekenning van die eregrade deur die Visekanselier.
6. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Visekanselier.
7. Sluiting deur die Visekanselier.
- Staan asseblief* 8. Akademiese prosesie verlaat die verhoog.

## PROGRAMME

- Stand please* 1. Entrance of academic procession into the hall.
- Stand please* 2. Singing of the National Anthem (see inside back cover).
- Sit please* 3. Congregation formally constituted by the Vice-Chancellor.
4. Welcome by the Vice-Chancellor and Prof X Simon.
5. Presentation of the candidates for the honorary doctorates and conferment of the degrees by the Vice-Chancellor.
6. Presentation of candidates receiving qualifications by the dean of the faculty and conferment of qualifications by the Vice-Chancellor.
7. Closing by the Vice-Chancellor.
- Stand please* 8. The academic procession leaves the stage.
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## EREGRADE | HONORARY DEGREES

**Die graad Doktor in die Teologie (DTh), honoris causa, aan  
The degree Doctor of Theology (DTh), honoris causa, to**

### MUSA W DUBE

**vir die bekendstelling van 'n nuwe manier van Bybellees in die soeke na geregtigheid vir almal, waaronder Afrikavroue en nasies wat steeds die gevolge van kolonisasie dra, en die innoverende ontginning van haar dissipline om MIV en vigs in Afrika te bestry, synde 'n treffende voorbeeld van sosiaal betrokke vakkundigheid.**

Haar gebruik van gevorderde kritiese navorsing sowel as inheemse hulpbronne uit haar Afrikakultuur om teologiesesers die Bybel op verfrissende en verantwoordelike maniere te laat lees, maak professor Musa W Dube, 'n postkoloniale feministiese teoloog van Afrika, die toonbeeld van sosiaal betrokke vakkundigheid.

Hierdie professor in Nuwe Testament aan die Universiteit van Botswana en merkwaardige dogter van die vasteland het haar as een van die voorste stemme in postkoloniale Bybeluitleg gevestig. Deeglik in voeling met die behoeftes van haar plaaslike omgewing, erken Dube in ál haar skryfwerk die belang van 'n voetsoolvlakuitleg van die Bybel, wat met die kultuur van Afrikalesers, veral vroue, ems maak. 'n Mylpaal in dié verband was die publikasie van *Other Ways of Reading: African Women and the Bible* (2001) onder haar leiding, wat die unieke bydrae van Afrikavroue se teologieë toon. Haar deemis met die kontinent dien ook as dryfveer vir haar voorspraak vir 'n Bybeluitleg wat vir dekolonisasie as 'n onlosmaaklike deel van die bevrydingstryd voorsiening maak.

Daarbenewens kritiseer Dube vreesloos Afrikakerke se reaksie op MIV en vigs. Deur haar publikasies eis sy eerstens deurentyd rekenskap van kerke vir hulle onvoldoende reaksie op die pandemie. Met haar vreeslose uitspraak "Die Kerk het vigs" in 2002 probeer sy Afrikakerke uitdaag om die grense van kerkverband in die stryd teen MIV en vigs in hulle gemeenskappe oor te steek. Tweedens moedig Dube Afrikakerke aan om te midde van die vernietigende uitwerking van die siekte lewe te verkondig deur versorging en deemis, die herintegrasie van persone met MIV en vigs by hulle gemeenskappe, en groter klem op die belang van antiretrovirale middels vir alle geaffekteerdes. Derdens is hierdie formidabele vakkundige 'n kampvegter vir die gebruik van sang, drama en digkuns in die stryd teen MIV en vigs, waarvoor sy die kulturele praktyke en mondelinge teologie eie aan Afrika ontgin.

Die Universiteit Stellenbosch is trots daarop om professor Musa W Dube te vereer as teoloog, aktivis, wetenskaplike vir die samelewing, en onmiskenbaar Afrikaan.

**for having pioneered a new way of reading the Bible in pursuit of justice for all, including African women and peoples still suffering the consequences of colonisation, and for drawing on her discipline to fight HIV and Aids on the continent, being a prime example of socially engaged scholarship.**

By harnessing advanced critical study along with indigenous resources from her African culture to challenge readers of theology to read the Bible in refreshing and responsible ways, African postcolonial feminist theologian Professor Musa W Dube epitomises socially engaged biblical scholarship.

This professor of New Testament at the University of Botswana and remarkable daughter of the continent has established herself as one of the leading voices in postcolonial biblical interpretation. Attuned to the needs of her local context, Dube has throughout her writings recognised the importance of grassroots readings of the Bible that engage with the culture of readers in Africa, particularly women. A milestone achievement in this regard was the publication under her leadership of *Other Ways of Reading: African Women and the Bible* (2001), showcasing the unique contribution of African women's theologies. Her concern for the continent has also seen her advocate a biblical interpretation that seeks to read for decolonisation as an integral part of the liberation struggle.

Moreover, Dube fearlessly critiques African churches' response to HIV and Aids. Through her writings, she firstly continues to hold churches accountable for failing to respond adequately to the pandemic. Boldly proclaiming "The Church has Aids" in 2002, she sought to challenge African churches to transcend denominational divides to fight HIV and Aids in their communities. Secondly, Dube has urged African churches to proclaim life amidst the debilitating effects of the disease by showing care and compassion, reintegrating individuals with HIV and Aids into their communities, and stressing the need for antiretroviral drugs for those affected. Thirdly, this formidable scholar has championed the use of song, drama and poetry in the battle against HIV and Aids, retrieving true African cultural practices and oral theology.

Stellenbosch University proudly honours Professor Musa W Dube – theologian, activist, scientist-for-society, and distinctly African.

**Die graad Doktor in die Teologie (DTh), honoris causa, aan  
The degree Doctor of Theology (DTh), honoris causa, to**

### THABO CECIL MAKGOBA

**as die samelewing se morele kompas wat die waardes van menswaardigheid, wedersydse respek, geregtigheid en blywende vrede prakties uitleef, vir sy opregte verbintenis tot onderwys van gehalte vir almal, en sy bydrae om as nugter stem die samelewing sy weg deur onstuimige tye te help baan.**

Thabo Cecil Makgoba word in 1990 tot priester gewy en in 2007 tot aartsbiskop van Kaapstad verkies – op 47 die jongste wat tot nog toe dié amp beklee. Sedertdien bevind hy hom op die wêreldverhoog. Op platforms soos die jaarlikse Wêreld Ekonomiese Forum neem hy 'n duidelike morele en etiese standpunt in oor verskeie hedendaagse wêrelduitdagings. Dit sluit in hoe om geloof in die ekonomie te herstel, politieke stabiliteit teweeg te bring, die volhoubaarheid van gemeenskappe, en 'n heroorweging van waardes in 'n krisisvoos wêreld. Sy vasbeslotenheid om die samelewing deur sy werk te verbeter, blyk duidelik uit sy studie oor spiritualiteit in die Suid-Afrikaanse mynbousektor, waarmee hy in 2009 'n PhD van die Universiteit van Kaapstad (UK) verwerf.

'n Opvallende kenmerk van Makgoba se diens as aartsbiskop is sy toewyding aan gelyke toegang tot onderwys vir almal. Juis daarom vervul hy gedurende die onlangse oproer by ons tersiêre instellings 'n kemrol met sy bedaarde, kalm teenwoordigheid. Hy sien toe dat die sinode van die Anglikaanse Kerk die hoëronderwyskrisis bespreek, en reik 'n verklaring van steun uit vir 'n heilsamer onderwysbestel vir die huidige generasie. Hy roep ook die kapelane en studenteleiers van Wes-Kaapse universiteite byeen sodat studente met die kerk oor hulle eise en kwessies kan gesels. Daarbenewens ondersteun hy die formele verhouding tussen die Anglikaanse Bisdom van Valsbaai en die Universiteit Stellenbosch se Fakulteit Teologie sonder voorbehoud.

By uitstek diensbaar aan die samelewing, is Makgoba beskermer van 'n aantal organisasies sonder winsoogmerk, 'n leermeester oor etiese leierskap en voogdyskap vir MBA-studente aan die UK, en 'n voormalige kommissaris van die Persvryheidskommissie. Onder sy vele eerbewyse is die prestigeryke Kruis van St Augustinus, wat hy in 2008 vir uitsonderlike diens aan die Anglikaanse gemeenskap van die Aartsbiskop van Kantelberg ontvang.

Die Universiteit Stellenbosch erken aartsbiskop Thabo Cecil Makgoba as 'n voorbeeld van diensbare leierskap en 'n kalm teenwoordigheid wat die samelewing na 'n beter lewe vir almal help lei.

**for serving as a moral compass to society by espousing the values of human dignity, mutual respect, justice and enduring peace, for his deep commitment to quality education for all, and for being the voice of reason that helps society navigate turbulent times.**

Ordained to the priesthood in 1990, Thabo Cecil Makgoba was elected Archbishop of Cape Town in 2007 – at 47, the youngest ever to occupy this office. This catapulted him onto the world stage. Using platforms such as the annual World Economic Forum, he has since taken a clear moral and ethical stance on various modern-day complexities facing the world. These include restoring faith in the economy, fostering political stability, the sustainability of communities, and re-thinking values in a post-crisis world. His resolve to use his vocation to improve society is evident from his study on spirituality in the South African mining sector, which earned him a PhD from the University of Cape Town (UCT) in 2009.

An outstanding feature of Makgoba's archiepiscopacy is his commitment to equal access to education for all, which has seen him play a key role as the proverbial cool head in the recent upheaval at our tertiary institutions. He ensured an Anglican Church synod debate on the higher education crisis and issued a statement of support for a more wholesome education dispensation for the current generation. Makgoba also convened the chaplains and student leaders of Western Cape universities to offer students the opportunity to approach the church about their demands and concerns. Moreover, he unreservedly supports the Anglican Diocese of False Bay's formal relationship with Stellenbosch University through our Faculty of Theology.

Wholly dedicated to service to society, Makgoba is a patron of a number of non-profit organisations, a teacher on ethical leadership and stewardship for MBA students at UCT, and a former commissioner of the Press Freedom Commission. His many awards notably include the prestigious Cross of St Augustine, which he received in 2008 from the Archbishop of Canterbury for distinctive service to the Anglican community.

Stellenbosch University acknowledges Archbishop Thabo Cecil Makgoba for being an exemplary servant-leader and a calm presence steering society towards a better life for all.

**Die graad Doktor in die Ingenieurswese (DIng), honoris causa, aan  
The degree Doctor of Engineering (DEng), honoris causa, to**

**TRUEMAN THANDABANTU GOBA**

**vir sy voortreflike bydrae om nasionale sleutelinfrastruktuur te voorsien, sy kernrol in die ontwikkeling en transformasie van Suid-Afrikaanse siviele ingenieurswese, sy diens as 'n denkleier wat nasionale nywerheid bevorder, en sy belegging in die samelewing deur jong aspirant-ingenieurs die pad na sukses te wys.**

Trueman Thandabantu Goba het naam gemaak as 'n leier in die Suid-Afrikaanse siviele-ingenieursbedryf – nie net as uitmuntende ingenieur nie, maar ook deur as mentor en rolmodel dié vakgebied vir minderbevoorregtes te ontsluit.

Hierdie booring van Durban besit die graad MIng (Siviele Ingenieurswese) van Cornell-universiteit, Verenigde State, en is besonder vaardig op verskeie terreine, waaronder vervoer, vloeimeganika, geotegniese en strukturele ingenieurswese. Gevolglik het hy al tot menige bekroonde projek bygedra, soos die Nelson Mandela-brug (Johannesburg), die N4 Platinum-tolpad (Noordwes), die Bergrivierdam (Franschhoek), die Durbanse hawetonnel, die Tsitsarivierbrug (Oos-Kaap), en verskeie FIFA Wêreldbekerstadions in 2010.

Daarbenewens is Goba hooggeag as kampvegter vir aspirant- siviele ingenieurs uit benadeelde groepe. Grootliks danksy sy mentorskap spog die aansienlik getransformeerde Suid-Afrikaanse siviele-ingenieursbedryf deesdae met 'n aantal belowende, jong swart beroepslui, wat op hulle beurt hulle gemeenskappe deur noodsaaklike infrastruktuur ophef. Ter erkenning van sy bedryfsleierskap op 'n deurslaggewende tydstip van ons jong demokrasie is Goba in onderskeidelik 2002 en 2016 tot die eerste swart president van die Suid-Afrikaanse Instituut van Siviele Ingenieurs (SAICE) en die Suid-Afrikaanse Akademie van Ingenieurswese (SAAE) verkies.

Hy is immer oorgehaal om die samelewing te dien, en voorsien gesoute leierskap gedurende sy ministeriële aanstellings in die Ontwikkelingsraad vir die Konstruksiebedryf (CIDB) en die Suid-Afrikaanse Ingenieursraad (ECSA). As 'n presidensiële aanstelling in die land se eerste Nasionale Beplanningskommissie, wys hy sy staal as 'n denkleier van formaat.

Onlangse eerbewyse wat sy verbintenis tot uitnemende en inklusiewe ingenieurswese erken, sluit in SAICE se goue medalje – hulle hoogste eerbewys – en 'n toekenning vir lewenslange prestasie by die Suid-Afrikaanse Professionele dienste-prysgeleentheid.

Die Universiteit Stellenbosch saluier Trueman Goba as 'n ingenieur van nie net sleutelinfrastruktuur nie, maar van 'n ganse nuwe generasie impakryke beroepslui.

**for his exceptional contribution to establish critical national infrastructure, his key role in growing and transforming South African civil engineering, his service as a thought leader taking national industry forward, and for ploughing back by showing aspiring young engineers the way to success.**

Trueman Thandabantu Goba has set himself apart as a leader in South African civil engineering, not only excelling as a first-rate engineer, but also unlocking the field for those less fortunate by serving as their mentor and role model.

Holding the degree MEng (Civil Engineering) from Cornell University, United States, this born Durbanite is adept at various disciplines such as transportation, fluid mechanics, geotechnical and structural engineering. This has seen him contribute to award-winning projects, including the Nelson Mandela bridge (Johannesburg), the N4 Platinum toll freeway (North West), the Berg River dam (Franschhoek), the Durban harbour tunnel, the Tsitsa River bridge (Eastern Cape) and several 2010 FIFA World Cup stadiums.

Moreover, Goba is widely respected as a champion for aspiring civil engineers from disadvantaged groups. Largely thanks to his mentorship, a significantly transformed South African civil engineering industry today has a promising pool of young black professionals, who in turn uplift their communities through vital infrastructure. In recognition of his industry leadership at a critical time for our democracy, Goba was elected the first black president of the South African Institution of Civil Engineering (SAICE) in 2002, and of the South African Academy of Engineering (SAAE) in 2016.

Always ready to serve society, Goba provided seasoned leadership during ministerial appointments to the Construction Industry Development Board (CIDB) and the Engineering Council of South Africa (ECSA). As a presidential appointment to the country's first National Planning Commission, he showed his mettle as a thought leader of note.

Recent accolades recognising his commitment to engineering excellence and inclusivity include the SAICE gold medal – their highest honour – and a lifetime achievement award at the South African Professional Services Awards.

Stellenbosch University salutes Trueman Goba as an engineer of not only key infrastructure, but of an entire new generation of high-impact professionals.

*Fakulteit Teologie | Faculty of Theology*

**Doktor in die Wysbegeerte  
Doctor of Philosophy**

CHUNG, Youjin (Ecclesiology)

*Münster and minjung: Re-reading the Anabaptist Münster kingdom from a perspective of Korean minjung (common people) theology*

The candidate concluded in this research that history is not an objective, external historical reality. Rather, historians play a pivotal role in construing history. This dissertation utilised the historical constructive theological approach in order to bring two historical events, namely the 16th century radical Reformation and the 20th century theological movement in Korea, into conversation with each other. In this sense, it differed from a historical analysis, which places two historical movements in comparative perspective. This approach, as a counter-history, challenged the revisionist and objectivistic interpretation of the radical Reformation that pretends to be complete and authoritative.

*Supervisor: Prof MA Plaatjies-Van Huffel*

DUNN, James Patrick (Systematic Theology)

*Discipleship as theological prolegomenon: Implications for the relation of theory and praxis in the work of Pascal, Kierkegaard, and Bonhoeffer*

Contemporary theological thought wrestles with a methodological problem, particularly acute in the dialogue between Western and Southern Christianity. That problem is to what extent theological theory should stand over, under, or alongside Christian praxis. This dissertation examined three Christian thinkers interested in the philosophical, theological, and epistemic implications of discipleship as a category orienting theory to praxis, and praxis to transcendence. In conversation with Blaise Pascal, Søren Kierkegaard and Dietrich Bonhoeffer, the study argued for a way of understanding Christian praxis which can serve as a prolegomenon to theological speech, a grounds from which language about God can be articulated.

*Supervisor: Prof RR Vosloo*

EKITALA, Luka Ariko (Ecclesiology)

*Constitution or church order? A church judicial analysis of the church documents in the Reformed Church of East Africa*

This dissertation evaluated the constitution of the Reformed Church of East Africa (RCEA) against church polity principles ordinarily equated with Reformed/Presbyterian churches worldwide. The candidate explored the following principles: the limited autonomy of the local congregation, the importance of federative relationships for the proper ecclesial community and mutual edification, the executive, legislative and judicial power bestowed on both the minor and major assemblies, and the necessity of Christian discipline. He concluded that these principles should be utilised as a lens when embarking upon the drafting of the new church order of the Reformed Church of East Africa.

*Supervisor: Prof MA Plaatjies-Van Huffel*

KIM, Joong Goo (New Testament)

*How faith works in James 4:13-5:20: An exegetical-theological interpretation*

This research addressed intriguing questions on the nature of faith and how works emanate from it in specific situations, using a theological approach integrated with exegetical analysis, based on the historical and cultural context of the text. It showed that under harsh socio-economic conditions the protreptic letter of James presented the nature of faith as confidence in the message of truth and the attitude of wholehearted commitment to God: true faith is mature in thinking, speaking, and acting. For James, faith as confidence and wholehearted commitment to the word of Jesus and God's will produce appropriate responses in life-situations.

*Supervisor: Prof J Punt*

MASAITI, Bridget Nonde (Missiology)

*Women and male power: A study of the missional policy of the African Independent Church in Northern Zambia*

In a study on the Mutima Church, an African Initiated Church, founded in 1955 in Northern Zambia, two key findings were reported: The Church's founder, former Roman Catholic seminarian Emmanuel Mulilo Chishimba, is the sole source of the Church's policies, which are believed to be special revelations from God. Although both men and women may be ordained and are subsequently expected to take a vow of celibacy, the male-formulated policy engenders attitudes of subordination and submission in women, specifically to the founder. Sometimes the latter is reflected in sexual relationships with the founder and the birth by these women of so-called Children of the Spirit.

*Supervisor: Dr H Mbaya*

MOSTERT, Martin (Practical Theology)

*The liturgy of conversion. Evangelism praxis in the Methodist churches of Cape Town*

This dissertation undertook a liturgical and missiological enquiry into why the Methodist Churches of Cape Town are not expanding through evangelism and conversion, with the intention of bringing scholarly investigation to bear on a topic not often dealt with seriously enough in academia. By means of the careful inductive study of two sources – ethnographic interviews conducted with Methodist ministers, and an ethnographic reading of John Wesley's *Journal* – a grounded theory of ethical, contextual evangelism was developed, presented in terms of a liturgy of conversion, incorporating both 18th- and 21st-century insights. The study concluded with a strong argument for a value-based praxis in our contemporary society.

*Supervisor: Prof JH Cilliers*

MÜLLER van Velden, Nina Elisabeth (New Testament)

*When the lines are blurred: A gender critical reading of the narratives of John 12:1-8 and John 13:1-17*

Close attention to the contemporary settings of biblical narratives in their ancient Mediterranean socio-cultural background, the role of the interpreter's social location in the interpretation process, and dynamic shifts in how gender and sexuality were and are conceptualised, allowed for a more appropriate reading of the so-called feet and meal narratives of John 12:1-8 and 13:1-17. A gender critical reading of biblical narratives engages and encourages theological frameworks that can permit and even encourage complexity in theological discourses on gender and sexuality. Monolithic responses to complex questions were challenged, in favour of gendered ambiguity as presented in the characterisation in these narratives.

*Supervisor:* Prof J Punt

MUSA, Hassan (Old Testament)

*An ironic depiction of being wise in search of wisdom: A socio-rhetorical study of the Elihu speeches in Job 32-37*

Amidst a surprising lack of interest in the book of Job by African scholars, this socio-rhetorical study identified a dual function for the Elihu speeches in Job 32-37: both as a response to his preceding oath of innocence (Job 29-31) as well as preparation for the forthcoming YHWH speeches (Job 38-42). The new appreciation for the role of irony in the reflection on being 'wise' opens new insight into how God is perceived to play a role in human suffering and the impact it has on the question of justice in the book of Job.

*Supervisor:* Prof HL Bosman

STEGMANN, Robert (New Testament)

*Male gender construction and representation in Paul: Reading I Thessalonians through a gender-critical, postcolonial optic*

The interpretational rift between querying or celebrating the ostensibly authoritative voice of Paul and tensions between academic and ecclesial approaches is particularly palpable in the social construction of masculinity in the Bible. I Thessalonians reveals a discursively constructed masculinity and draws on the critical optics of gender and postcolonial biblical criticism. Developing and applying these optics to I Thessalonians, an ethically responsible hermeneutics was modelled, which challenged the constricted ways in which biblical texts are interpreted and used to shape notions of biblical masculinity. Textual polysemy and discursive-rhetorical dimensions invite wider possibilities for gender construction and representation, suggested by male transgenerating in the Thessalonian assembly.

*Supervisor:* Prof J Punt

## Doktor in die Wysbegeerte Doctor of Philosophy

BAKOLO, Rodwell Simeon (Electronic Engineering)

*Magnetic modelling, analysis and on-chip shielding of single flux quantum (SFQ) circuits*

Single Flux Quantum (SFQ) circuits are highly susceptible to failure if exposed to even small magnetic fields. To improve the magnetic immunity of SFQ circuits, uniform magnetic fields were modelled and incorporated into cells for analyses. On-chip conventional solid and novel grid shields were developed. The solid shield, a continuous layer that covers an entire cell, is effective against perpendicular fields, while the grid shield is effective against in-plane fields. Finally, design tenets that target the layout design of inductors and cell orientation to improve magnetic field tolerance of SFQ circuits were proposed and analysed.

*Supervisor:* Prof CJ Fourie

CHITAWO, Maxon Lexon (Chemical Engineering)

*Systems approach in developing a model for sustainable production of bioenergy in Malawi*

A model based on systems approach and system dynamics modelling was developed for assessing sustainability of producing bioenergy from forest and rice residues in integrated systems in Malawi. Sawmilling technologies, stakeholder influence and management practices were identified as major sources of investment risks, influencing residues availability for bioenergy production. Innovations, through enforceable annual allowable cut and improved forest plantation management practices, and targeted bioenergy supply to limiting unit operations in rice farms, could result in resilient integrated bioenergy systems. Therefore, the model is a useful planning and technical tool for sustainable integration of bioenergy in timber and rice production systems.

*Supervisor:* Prof AFA Chimphango

DE BEER, Christle (Industrial Engineering)

*Improving the efficiency of university technology transfer*

University technology transfer is the process in which research is translated into a commercially valuable format. In South Africa, this process is not undertaken with a great deal of success and, therefore, this study sought a means by which to improve the efficiency. This study developed a tool for measuring the performance of university technology transfer offices, and a mechanism to assist in sharing best practices between them. Consequently, the efficiency of technology transfer offices are improved and, therefore, universities are able to remain competitive.

*Supervisor:* Prof CSL Schutte

DE MEYER, Oelof Abraham Jakobus (Mechatronic Engineering)

*Optimisation in plant operations for a 100 MW central receiver CSP plant with focus on the plant operating strategies*

The operational capabilities of the central receiver concentrated solar power (CSP) plant were demonstrated under various boundary conditions by the resulting key plant performance parameters. The developed simulation model optimises the plant operations for various

operating strategies identified. One of the significant findings was the part-load operational optimisation for the power block to increase the plant performance, generate more output, reduce annual turbine stops and reduce plant levelised cost of energy (LCOE). The utilisation factor in grid-constrained areas was increased by providing continuous power delivery to the electric grid and offering complementary services to non-dispatchable generation such as wind and photovoltaics.

*Supervisor:* Prof F Dinter

*Co-supervisor:* Dr S Govender (external)

DE VILLIERS, Nico-Ben (Civil Engineering)

*Optimality in sewer network design*

Algorithms were developed to minimise the installed cost of gravity sewer networks. They combine a novel, computationally efficient hydraulic optimisation algorithm with ant colony constructed layouts based on four proposed tree growing techniques. A problem generation library was developed and networks with various characteristics were generated. These networks were optimised using the proposed algorithms and network characteristic parameters were monitored as the solutions improve in order to expose correlations between the network characteristics and installation cost. This knowledge was exploited to develop specialised heuristic influence factors that were shown to significantly improve the installed cost for all test cases.

*Supervisor:* Dr GC van Rooyen

*Co-supervisor:* Dr A Sinske (GLS Consulting, Stellenbosch)

DU TOIT, Philip Coenrad (Mechanical Engineering)

*An artificial intelligence approach for biomass devolatilisation in an industrial CFD model with advanced turbulence-chemistry interaction*

The groundwork to include more detailed chemistry than global approaches in a combustion simulation was completed. A reduced-order model of the Biomass Chemical Percolation Devolatilisation model, ANN-Bio-CPD, was developed and implemented with artificial neural networks in order to achieve ease of execution and computational cost reduction with regard to an industrial computational fluids dynamics application. ANN-Bio-CPD was validated with wire-mesh reactor and drop-tube furnace experiments from literature. Subsequently, the Eddy Dissipation Concept (EDC) turbulence-chemistry interaction model was implemented and validated with ANN-Bio-CPD in a bagasse-fired boiler simulation. The EDC model constants were adjusted to achieve the correct temperature and intermediate species results in combination with a two-step global reaction mechanism.

*Supervisor:* Prof CJ Meyer

*Co-supervisor:* Dr R Laubscher

DUCKITT, William David (Electronic Engineering)

*A digital low-level radio frequency control system for the particle accelerators at iThemba LABS*

A digital low-level radio frequency control system for cyclotron particle accelerators was designed, implemented and evaluated. Using state-of-the-art field programmable gate arrays, high-speed digital-to-analog and analog-to-digital converters, and a modified direct digital synthesis technique, remarkable improvements in beam quality were achieved. The developed system was able to maintain an amplitude stability of 0.01 percent and a phase stability of 0.01 degrees, paving

the way to higher current intensity isotope production. It has been successfully incorporated into the cyclotrons at iThemba LABS and the Helmholtz-Zentrum in Berlin, and generated strong interest from other international laboratories.

**Supervisor:** Prof TR Niesler  
**Co-supervisor:** Dr JL Conradie (*iThemba LABS*)

**ENGELBRECHT, Susanna Aletta (Civil Engineering)**

***Towards design rules for reinforced strain hardening cement composites (R/SHCC) in bending***

Strain hardening cement composite (SHCC) is an advanced construction material for repair, retrofitting, and new infrastructure. The main characteristics are controlled cracks of fine width and spacing, and increased resistance after crack formation. This renders it ideal for structural ductility in seismic regions, and durability in corrosive coastal regions. This dissertation developed novel models to facilitate structural application. A semi-analytical model and a simplified design model for steel bar reinforced SHCC flexural members were developed and validated. The models incorporated bilinear stress-strain relations in both tension and compression, distinguishing the three phases of uncracked, cracked, and crushing domains.

**Supervisor:** Prof GPAG van Zijl

**EYGELAAR, Jancke (Industrial Engineering)**

***Generator maintenance scheduling based on the expected capability of satisfying energy demand***

A power utility's ability to satisfy energy demand can be influenced significantly by unexpected breakdowns of *power generating units* (PGUs). A computerised decision support system capable of providing good PGU maintenance schedules for power systems was developed in this study. Users were able to select one of two scheduling criteria to optimise maintenance scheduling of a power system. The first scheduling criterion involved minimising the probability that any PGU in the system will fail, while the second involved maximising the expected energy produced during the scheduling window. The effectiveness of these scheduling criteria was analysed with respect to a real-world case study based on the South African national power grid. By employing either of these scheduling criteria, the possibility of load shedding or power outages may be significantly reduced.

**Supervisor:** Prof JH van Vuuren

**FOURIE, Frederick Christiaan van Niekerk (Chemical Engineering)**

***The high pressure phase behaviour of detergent range alcohols and alkanes***

Unique equipment was designed, constructed and successfully used to evaluate high-pressure (68-237 bar) CO<sub>2</sub> solvent for separating two industrially relevant hydrocarbon liquids. Well-mixed three-component mixtures were allowed to separate into co-existing vapour-like and liquid phases, followed by sampling and online analysis of both phases. The withdrawal of representative, yet non-disruptive, samples from a 100 ml equilibrated high-pressure environment proved challenging and necessitated continuous visual monitoring of the vessel interior. Results indicated the initial liquid-A-to-liquid-B ratio impacted separation efficiency, and preferred operating temperatures and pressures were identified. Shortcomings were subsequently identified in the ability of four industrially used mathematical models to predict the experimental data.

**Supervisor:** Prof JH Knoetze  
**Co-supervisor:** Dr CE Schwarz

**JACKMAN, Kyle (Electronic Engineering)**

***Fast multi-core CEM solvers and flux trapping analysis for superconducting structures***

Development of a numerical solver, called TetraHenry (TTH), for inductance extraction and flux trapping analysis of superconducting integrated circuits, was done. Tetrahedral elements were used for three-dimensional volumes; whereas two-dimensional triangular elements were used for thin superconducting films. Support for piecewise homogeneous dielectric and magnetic materials was implemented, which enabled frequency-dependence impedance extraction. The effects of external magnetic fields on the performance of superconducting circuits were analysed. The Method of Moments was used to obtain a system of linear equations, which was solved with a preconditioned GMRES solver and accelerated with the Fast Multipole Method. Accuracy and performance were evaluated by comparing results to existing software.

**Supervisor:** Prof CJ Fourie

**KRUGER, Karel (Mechanical Engineering)**

***The development and evaluation of an Erlang-based control system for reconfigurable manufacturing systems***

Multi-agent systems (MASs) are often used to implement holonic control architectures in manufacturing systems research. The candidate developed a novel holonic control implementation based on the Erlang programming language. A comparison between the Erlang and MAS implementations was facilitated through evaluation criteria, based on quantitative and qualitative performance measures. The evaluation criteria developed in the dissertation provided a base for future research of this kind. The comparison showed that the Erlang implementation exhibits all the required functionality and offers significant advantages. These findings highlighted the potential use of Erlang in future *Industry 4.0*, *Cyber-Physical Systems* and *Internet-of-Things* applications.

**Supervisor:** Prof AH Basson

**MAKWIZA, Chikondi Ngwanji (Civil Engineering)**

***Estimating outdoor water use allowing for the possible impacts of climate change***

This study was aimed at estimating residential outdoor water use for the purpose of estimating how it would be impacted by climate change. Residential outdoor water use was examined using simple and effective techniques that were employed at a relatively low cost. Water utilities could employ the techniques presented to better plan for the expected additional outdoor water use resulting from climate change. The modelling approaches presented are also essential for determination of the weather-sensitive component of residential outdoor water use that is vital for water demand management.

**Supervisor:** Prof HE Jacobs

**MBEWE, Peter Binali Kamowa (Civil Engineering)**

***Structural system performance evaluation towards sustainable residential buildings***

A simplified assessment method of structural walling systems of infrastructure intended to enable assessment of complex structural systems at either the conceptual design stage, or possibly for existing structures at the stage of structural renovation or rehabilitation was developed. A truss-based analogy was used to model the infill frames subjected to seismic loading, with a pushover analysis adopted. The approach enabled incorporation of structural integrity in broader

sustainability assessment frameworks for appropriate decision-making by potential or existing owners and their professional teams. Structural performance of the structural system or repairs influences durability of the infrastructure, thus influencing its sustainability.

**Supervisor:** Prof GPAG van Zijl

**MEYER, Elmine (Electronic Engineering)**

***Tunable narrow-band X-band bandpass filters***

The dissertation presented two tunable bandpass filters in the 10 GHz range, one planar and one in waveguide, both using varactor diodes as tuning elements. For the planar filter, a novel geometrically decoupled biasing network, which provides frequency independent, wideband biasing with no extra components, was proposed. For the waveguide filter, an evanescent mode structure with the tuning elements inserted in vertical posts was proposed. This was combined with mechanical tuners to offer post-manufacturing, in-situ tuning. It was shown that the varactor losses dominated the response of both filters.

**Supervisor:** Prof P Meyer

**MKHIZE, Ntandoyenkosi Malusi (Chemical Engineering)**

***Pyrolysis process optimisation to maximise limonene production from waste tyres***

Waste-tyre stockpiles are a major economic and environmental challenge, and their generation rate surpasses conventional recycling techniques' consumption capacity. Waste-tyre valorisation by pyrolysis entails producing valuable chemicals (DL-limonene) through increasing their content in the tyre-derived oil (TDO) and then using remaining TDO for energy recovery. Pyrolysis reactor and condensation system design influences not merely TDO and DL-limonene yield, but reduces heteroatomic compounds (nitrogen-, oxygen-, and sulphur-containing) in the TDO. High heating rate, low gas residence time and moderate temperature reactors and direct contact (between gases and cooling liquid) quenching condensation systems are ideal pyrolysis operating conditions.

**Supervisor:** Prof JF Görgens

**MOVIUS, Samantha Jane (Industrial Engineering)**

***Self-organisation in traffic signal control algorithms***

Self-organisation has recently been proposed as an alternative approach towards improving traffic signal control, particularly during periods of light traffic flow, due to its flexible nature and its potential to result in emergent behaviour. Two new self-organising traffic control algorithms were proposed in this study and compared with existing self-organising algorithms in the context of a microscopic traffic simulation model for a range of different road network topologies (grids and corridors) and scenarios (such as road closures and abnormal traffic patterns). The new algorithms outperformed the existing algorithms in the majority of cases under light to moderate traffic conditions.

**Supervisor:** Prof JH van Vuuren

**MUNDIKE, Jhonnah (Chemical Engineering)**

***Torrefaction and pyrolysis of invasive alien plants (IAPs) from Zambia as coal substitute***

Invasive alien plants from Zambia, namely *Lantana camara* and *Mimosa pigra*, were investigated as feed-stocks for solid biofuel production. The conversion of both samples was optimised at milligram-scale through torrefaction and slow pyrolysis, for char yield and energy content, where temperature was the most influential factor. Scaling-up increased char yield and energy content by up to 16 and 3%,

respectively. Co-combustion results from char samples blended with coal showed that blended fuel reactivity depended on lignocellulosic type and pre-treatment temperature, with blends up to 15% char content found to be applicable in initially coal-designed reactors.

**Supervisor:** Prof JF Görgens

**NSAFUL, Frank (Chemical Engineering)**

***Thermochemical biomass upgrading for co-gasification with coal***

Lignocellulosic biomass is a renewable and sustainable energy source. However, it is characterised by several negative properties, thereby hindering the efficient utilisation of biomass in gasification application, particularly the high content of oxygenated groups (tar precursor). In this study, thermal pre-treatment (250-400 °C) of biomass was used to produce a char with improved fuel properties, and an analytical strategy was developed for the quantification of oxygenated products released during devolatilisation. The study established a preferred pre-treatment condition (350 °C) for biomass, resulting in properties (devolatilisation product, chemical composition) comparable to coal for co-gasification.

**Supervisor:** Prof JF Görgens  
**Co-supervisor:** Prof JH Knoetze

**PRINSLOO, Gerhardus Johannes (Mechatronic Engineering)**

***Synthesis of an off-grid solar thermal cogeneration and intelligent smart-grid control system for rural applications***

The candidate investigated the problem of rural electrification through the use of standalone solar cogeneration systems for off-grid rural villages in Africa, with specific focus on intelligent control systems. The study demonstrated the value of adapting next-generation Smart City energy network concepts in rural energy systems. By integrating ICT and economical energy-trading concepts into *Internet-of-Things*-type network algorithms, it demonstrated the value in modern agent-based optimisation of Smart Village energy operations to meet rural-village customer energy/budget needs. The control solutions proposed by the study are of strategic importance and will find utility to support research and development.

**Supervisor:** Mr RT Dobson  
**Co-supervisors:** Profs AC Brent and WJ Perold

**SMITH, Anthony (Industrial Engineering)**

***A tiered-facility vehicle routing problem with global cross-docking***

A typical pathology healthcare provider has to transport pathology specimens on a daily basis from a large set of specimen collection clinics, dispersed over a large geographical area, to a variety of laboratories of different processing capabilities within tightly constrained time windows. This results in a complex vehicle routing and scheduling problem that is very difficult to solve by hand. A decision support system was proposed in this study for aiding logistics managers of pathology healthcare services in the solution of daily instances of this problem. The working of the system is based on the (approximate) solution of a tri-objective combinatorial optimisation model and is capable of suggesting high-quality trade-off transportation routes and travel timings for the fleet of specimen collection vehicles of such a service. The system's vehicle routing and scheduling recommendations have led to very significant logistics cost savings for a large South African pathology healthcare provider.

**Supervisor:** Prof JH van Vuuren  
**Co-supervisors:** Ms L Bam and Prof P Toth  
**(DEI University of Bologna, Italy)**

**SOAL, Keith Ian (Mechanical Engineering)**

*System identification and modal tracking on ship structures*

Polar research vessels provide important scientific platforms and operate in harsh environments. Critical decisions regarding ice navigation are currently based mainly on dynamic response feedback. This dissertation investigated the use of system identification towards developing a decision support system for ice navigation. Full-scale measurements were conducted on the research vessel Polarstern in the Arctic. An open-source toolbox capable of performing automatic modal parameter identification and tracking was developed. A novel method to improve system identification results using a statistical model and a Kalman filter was proposed.

*Supervisor: Dr A Bekker*

**SWART, Daniel Johannes (Mechanical Engineering)**

*The psychoacoustics of electric vehicle signature sound*

The automotive industry is currently searching for a pleasant, safe and unique electric vehicle signature sound. The presented work investigated the attributes of electric vehicle signature sound and the associated consumer satisfaction. The sound signatures of six electric vehicles, one hybrid electric vehicle and several enhanced stimuli were benchmarked. Results showed that sharpness is fundamental to governing the electric vehicle sound experience. Lastly, a consumer satisfaction model was proposed through multiple linear regression and the 95th percentile sharpness value. The model yielded promising results and is proposed as a means of gauging consumer satisfaction for electric vehicle sound quality.

*Supervisor: Dr A Bekker*

**VAN DER MERWE, Johan (Mechatronic Engineering)**

*Development of a patient-specific unicompartmental knee replacement*

Patient-specific unicompartmental knee replacements could restore osteoarthritic knees closer to their non-pathological states than off-the-shelf products. However, current state-of-the-art replacements still rely on the skill and interpretation of technicians to reproduce healthy geometries. Therefore, this study focused on developing a reliable, semi-automated implant design method. The variation in a population's knees was captured by statistical shape modules in order to estimate new individuals' non-pathological situations. These estimates formed the basis of the implants' femoral components and matching tibial components were created through motion guidance. All components were generated via automated B-spline parametrisation. The design is ready for pre-clinical testing and evaluation.

*Supervisor: Dr D van den Heever*

**VAN EEDEN, Joubert (Industrial Engineering)**

*A model for the translation of South African economic activity into shipping container demand*

Quay-wall container forecasts are often overstated due to simplistic forecast methods. The objectives were to establish design requirements for a content-based quay-wall container framework and to develop it. The mixed-method design combined container modelling techniques, demand-side and supply-side shipping factors, and port network influences. Datasets received from the shipping industry were instrumental in understanding the relevant parameters consolidated into the design requirements. Key parameters identified per commodity were spatial disaggregation, rate of containerisation,

port preference, and weight-per-physical-container type. This more accurate forecasting model enables port planners to base container volume forecasts on validated demand.

*Supervisor: Prof J Havenga  
Co-supervisor: Prof CSL Schutte*

**YOON, Moonyoung (Industrial Engineering)**

*New multi-objective ranking and selection procedures for discrete stochastic simulation problems*

This dissertation discussed the design and development of a new multi-objective ranking and selection (MORS) procedure. The procedure followed the indifference-zone (IZ) approach, which is novel in the MORS domain, and the statistical validity of the procedure was proved with a rigorous mathematical analysis using a Bayesian inference model. The concept of relaxed Pareto optimality was also proposed to integrate the IZ concept in the multi-objective domain. In addition, a novel single objective ranking and selection procedure was proposed, which eliminated the least favourable configuration assumption and at the same time guaranteed the probability of correct selection requirement.

*Supervisor: Prof JF Bekker*

**Doktor in die Ingenieurswese  
Doctor of Engineering**

**KINGMAN, Samuel William (Chemical Engineering)**

*Microwave processing of materials*

Industry is under increasing pressure to develop more sustainable technologies for material processing. Microwave energy has received attention in the past few decades for potentially delivering sustainability benefits across a range of applications. However, few studies report successful commercialisation of microwave technologies. Professor Kingman's work identifies the reasons why scale-up of microwave heating is challenging, it identifies solutions to some of the major technical barriers and proposes generic methodologies that can be applied to different material processing systems across multiple industries. These methodologies have underpinned the successful development of microwave systems for large-scale material processing.

*Supervisor: Prof SM Bradshaw*

*Fakulteit Teologie | Faculty of Theology*

**Baccalaureus in die Teologie  
Bachelor of Theology**

Kgatle, Tshwarelo  
Kim, Joeun  
Mosinki, Matshediso  
Passenz, Marisa Chame

**Baccalaureus in die Teologie Cum Laude  
Bachelor of Theology Cum Laude**

Williams, Tiffany

**Baccalaureus Divinitatis  
Bachelor of Divinity**

Hendricks, Andre Johannes  
Hifindaka, Vilio Tutungeni  
Majiedt, John Hendry  
Mentoor, Michael Steward  
Meyer, Petrus Gerhard  
Mountain, Thanduloxo  
Spanneberg, Cornelius Llewellyn  
Strydom, Mardi

**Baccalaureus Divinitatis Cum Laude  
Bachelor of Divinity Cum Laude**

Niehaus, Heinrich Frederick

**Nagraadse Diploma in Teologie  
Postgraduate Diploma in Theology**

Audu, Marcus  
Calvary, Wiseman Ndodiphela  
Elstadt, Edrich Samuel  
Hasiso, Elias Assefa  
Kamanga, Chrispine Nthezemu  
Machokoto, Joseph  
Makombe, Lerato  
Mudzanire, Suspicion  
Nel, Theo Cannon  
Thabede, Hellen Nomusa

**Nagraadse Diploma in Teologie Cum Laude  
Postgraduate Diploma in Theology Cum Laude**

Müller, Jacobie Aletta  
Stoffberg, Zani  
Van der Walt, Mome Gabriel

**Magister in die Wysbegeerte  
Master of Philosophy**

Oranusi, Thaddeus Chukwumalume (Godsdiens en Kultuur)

**Magister in die Teologie  
Master of Theology**

Alberto, Alberto Lucamba Salombongo (Ou Testament)  
Burger, Hermanus Crous (Praktiese Teologie: Bedieningspraktyk)  
Dora, Tihitina Telemos (Praktiese Teologie)  
Edwards, Petronella Andrienna (Praktiese Teologie: Bedieningspraktyk)  
Joubert, Odile (Ou Testament)  
Klaasen, Melaney Ann (Praktiese Teologie)  
Leach, Edward John (Praktiese Teologie: Bedieningspraktyk)  
Mats'aba, Joel Kofo (Sistematiese Teologie)  
Minnaar, Tayla Amy (Sistematiese Teologie)  
Myambo, Violet (Praktiese Teologie)  
Park, Changsung (Nuwe Testament)  
Van Wyk, Daniel Stephanus (Praktiese Teologie)  
Volanie, Euodia (Praktiese Teologie: Bedieningspraktyk)  
You, Young-Kwang (Praktiese Teologie)

**Magister in die Teologie Cum Laude  
Master of Theology Cum Laude**

Bishop, Michael John (Praktiese Teologie: Bedieningspraktyk)  
Celeri, Phaphile Mawonga Michael (Praktiese Teologie)  
Dercksen, Elmarie (Ou Testament)  
Greyvenstein, Juanita (Sistematiese Teologie)  
Kwon, Yong Jun (Praktiese Teologie)  
Leuschner, Friedrich Wilhelm (Praktiese Teologie: Bedieningspraktyk)  
Minnaar, Quentin Shaun (Praktiese Teologie: Bedieningspraktyk)  
Stander, Reinhardt Roaan (Sistematiese Teologie)  
Steyn, Marie Henriette (Praktiese Teologie: Bedieningspraktyk)  
Van Velden, Wouter (Praktiese Teologie: Bedieningspraktyk)



**Baccalaureus in die Ingenieurswese  
Bachelor of Engineering**

Albertus, Grant John (Chemies)  
 Barker, Carlisle Belinda (Siviel)  
 Bamard, Richard (Siviel)  
 Booysen, Thomas Coetzee (Meganies)  
 Bosman, Malan Conrad (Bedryfsingenieurswese)  
 Braune, Erika (Siviel)  
 Buthelezi, Minenhle (Meganies)  
 Caine, John Woodfield (Megatronies)  
 Carollo, Michela (Chemies)  
 Chatukuta, Tatenda Sylvester (Bedryfsingenieurswese)  
 Cloete, Gorghanne (Siviel)  
 Cloete, Jana (Chemies)  
 Coetzee, Jaco (Siviel)  
 Coetzee, Jacques Alexander (Bedryfsingenieurswese)  
 Coetzee, Zara Rose (Siviel)  
 Cupido, Jason Brian (Chemies)  
 De Girardier, Rudolph Michel (Meganies)  
 De Jager, Christian Werner (Siviel)  
 Du Plessis, Jean-Prieur Jacques (Chemies)  
 Du Plessis, Tineke (Siviel)  
 Durandt, Petrus Gerhardus (Megatronies)  
 Engelbrecht, Denis Mccord (Bedryfsingenieurswese)  
 February, Tracey-Lee (Bedryfsingenieurswese)  
 Ferreira, Lourens Jan (Meganies)  
 Fourie, Marco (Meganies)  
 Govender, Preyin (Meganies)  
 Govender, Thilen (Siviel)  
 Grobler, Roann Pieter (Siviel)  
 Hall, Basil Hugo (Siviel)  
 Hassan, Muneer (Siviel)  
 Henn, Dewald Nicolaas (Meganies)  
 Higgo, Matthew Ray (Bedryfsingenieurswese)  
 Hillary, Ross Edward Thabo (Bedryfsingenieurswese)  
 Jonker, Philippus Johannes (Bedryfsingenieurswese)  
 Jordaan, Walter Jacobus (Chemies)  
 Karasawo, Stewart (Siviel)  
 Kassim, Shakeelah (Chemies)  
 Kelly, Frank Latrobe Geiger (Meganies)  
 Keppie, Andrew Allen (Siviel)  
 Kirsten, Frederik Johannes De Lange (Siviel)  
 Kotze, Dalmayne (Siviel)  
 Kritzinger, Louie (Megatronies)  
 Leuvennink, Bernard Cornelius (Bedryfsingenieurswese)  
 Lindoor, Loren Leigh (Chemies)  
 Lohmann, Gordon Henry (Bedryfsingenieurswese)  
 Louw, Johannes Petrus (Chemies)  
 Lubbe, Joachim Foster (Meganies)  
 Mans, Paula (Chemies)  
 Mc Neill, Hilton Ryan (Siviel)  
 MCewen, Jenay (Chemies)  
 Merrick, Wesley (Siviel)  
 Moolman, Benjamin Stephanus (Bedryfsingenieurswese)  
 Mthembu, Ngcebo Mbuso (Megatronies)

Musto, Branden Lee (Bedryfsingenieurswese)  
 Myburgh, Chad Jonathon (Elektries en Elektronies)  
 Naidoo, Santeshan Yogandra (Meganies)  
 Nascimento Galvao, Luís Miguel Martins (Meganies)  
 Ndayi, Vuyo Derrick (Elektries en Elektronies)  
 Nel, Peter-William (Chemies)  
 Ngara, Selassie Walker Champion (Chemies)  
 Oosthuysen, Johan (Megatronies)  
 Panchbhaya, Ziyauddin (Meganies)  
 Parker, Luqmaan (Siviel)  
 Pereira Ingles, Joelcia Melissa Da Franca (Elektries en Elektronies)  
 Prinsloo, Linda (Megatronies)  
 Siavhe, Andani Wanga (Meganies)  
 Singh, Antan Ryan (Meganies)  
 Sterne, Lawrence Neil (Siviel)  
 Stoffberg, Dirk Jacobus (Bedryfsingenieurswese)  
 Strydom, Philippus Theunis (Elektries en Elektronies)  
 Umuhoza, Doriane (Bedryfsingenieurswese)  
 Uys, Perryn De Waal (Chemies)  
 Van der Merwe, Vincent (Megatronies)  
 Van der Merwe, Willem Schalk (Siviel)  
 Van Deventer, Johan Gerhard (Elektries en Elektronies)  
 Van Huffel, Rick Charles (Siviel)  
 Van Niekerk, Kirsten Jacobus (Chemies)  
 Van Niekerk, Nicolette Simone (Siviel)  
 Van Wijk, Andries Petrus Rawlins (Siviel)  
 Van Wyk, Wemes (Elektries en Elektronies)  
 Vegter, Johannes Roelf (Megatronies)  
 Visagie, Jurie Wynand (Siviel)  
 Vlok, Thomas (Siviel)  
 Woodley, Tiffany (Elektries en Elektronies)

**Baccalaureus in die Ingenieurswese Cum Laude  
Bachelor of Engineering Cum Laude**

Cho, Seung (Siviel)

**Nagraadse Diploma in die Ingenieurswese  
Postgraduate Diploma in Engineering**

Dorfling, Johannes Adolf  
 Du Toit, Francois Johan  
 Hoffman, Kyle  
 Ipumbu, Martha Lawanifwa Tate-Ati  
 Kotze, Andre  
 Makhubelo, Dumisani Nation  
 Pinehas, Eino Tunehafo  
 Van der Walt, Jacobus

**Nagraadse Diploma in die Ingenieurswese Cum Laude  
Postgraduate Diploma in Engineering Cum Laude**

Coetzee, Jan Hendrik Jacobus

**Magister in die Ingenieurswese  
Master of Engineering**

Agnello, Nina Maria (Siviele Ingenieurswese)  
 Albertyn, Louis Andre (Megatroniese Ingenieurswese)

Asoba, Felix Akem (Meganiiese Ingenieurswese)  
 Bam, Hendrik Johannes (Ingenieursbestuur)  
 Beardmore, Ricki-Lee (Siviele Ingenieurswese)  
 Benson, Peter-Luke (Elektroniese Ingenieurswese)  
 Bergenthuin, Johannes Gysbertus (Meganiiese Ingenieurswese)  
 Bester, Andries Jacobus (Elektroniese Ingenieurswese)  
 Blom, Josua (Elektroniese Ingenieurswese)  
 Botes, Lizbe (Siviele Ingenieurswese)  
 Bredekamp, Zaandre (Siviele Ingenieurswese)  
 Burger, Berndt Cornelius (Siviele Ingenieurswese)  
 Burger, Martin Dewald (Bedryfsingenieurswese)  
 Chomba, Evans Mwila (Chemiese Ingenieurswese)  
 Cilliers, Barend Daniel (Siviele Ingenieurswese)  
 Conacher, Cleo Gertrud (Chemiese Ingenieurswese)  
 Cromhout, Betsie Marika Ané (Siviele Ingenieurswese)  
 De Bruyn, Phillip Arnold (Siviele Ingenieurswese)  
 De Villiers, Jeanne-Mari (Bedryfsingenieurswese)  
 De Villiers, Jeanne-Marie (Ingenieursbestuur)  
 De Wet, Leroi Johannes (Chemiese Ingenieurswese)  
 Dondofema, Richmore Aron (Bedryfsingenieurswese)  
 Du Preez, Daniell Josling (Siviele Ingenieurswese)  
 Dumakude, Niniva (Elektriese Ingenieurswese)  
 Engelbrecht, Francois (Siviele Ingenieurswese)  
 Engelbrecht, Francois Van Zyl (Bedryfsingenieurswese)  
 Engelbrecht, Lizet (Bedryfsingenieurswese)  
 Geldenhuys, Joanie Michellene Claudette (Elektriese Ingenieurswese)  
 Gowda, Rajesh (Chemiese Ingenieurswese)  
 Gurupira, Tafadzwa Lazarus (Elektriese Ingenieurswese)  
 Holmes, Gareth (Meganiiese Ingenieurswese)  
 Kabondo, Leonard (Ekstraktiewe Metallurgiese Ingenieurswese)  
 Kahaar, Mogamad Naweed (Siviele Ingenieurswese)  
 Kanguma, Emmanuel Shachoongo (Siviele Ingenieurswese)  
 Kaunde, Willard Grant (Siviele Ingenieurswese)  
 Khetni, Munir Milad (Chemiese Ingenieurswese)  
 Kleynhans, Hendrik Andries (Meganiiese Ingenieurswese)  
 Koekemoer, Tunet (Chemiese Ingenieurswese)  
 Labuschagne, Jean-Claude (Siviele Ingenieurswese)  
 Lawrenson, Nicholas (Elektroniese Ingenieurswese)  
 Leuvennink, Johannes Cornelius (Megatroniese Ingenieurswese)  
 Lombard, Daniel George (Megatroniese Ingenieurswese)  
 Lotter, Johannes Casparus (Meganiiese Ingenieurswese)  
 Louw, Everhard Johann (Elektroniese Ingenieurswese)  
 Maharaj, Danvir Rohith (Siviele Ingenieurswese)  
 Makinde, Olufolake Abiola (Bedryfsingenieurswese)  
 Mavavire, Thokozani Olga (Chemiese Ingenieurswese)  
 Meyer, Daniel (Siviele Ingenieurswese)  
 Mukuddem, Mohamed Ziyaad (Bedryfsingenieurswese)  
 Mukwati, Tendai Busisiwe (Meganiiese Ingenieurswese)  
 Muller, Charl Rossouw (Siviele Ingenieurswese)  
 Myburgh, Keshia Shermane (Siviele Ingenieurswese)  
 Naude, Nicolaas Hendrik (Elektroniese Ingenieurswese)  
 Oberholzer, Johannes Francois (Bedryfsingenieurswese)  
 Ockhuis, Dillan Kyle (Elektriese Ingenieurswese)  
 Okeowo, Oluwatimilehin Oluwaseun (Bedryfsingenieurswese)  
 Oosthuizen, Dewald (Chemiese Ingenieurswese)

Ozudogru, Halit Mehmet Raoul (Chemiese Ingenieurswese)  
 Pienaar, Linda (Siviele Ingenieurswese)  
 Pike, Leo Mallett (Siviele Ingenieurswese)  
 Potgieter, Gian Viljoen (Ekstraktiewe Metallurgiese Ingenieurswese)  
 Prentice, Gregory Stuart Kennedy (Ingenieursbestuur)  
 Prinsloo, Leon Petrus Jacobus (Meganiiese Ingenieurswese)  
 Rabie, Johannes Kasselman (Ekstraktiewe Metallurgiese Ingenieurswese)  
 Richardson, Michael Peter (Elektroniese Ingenieurswese)  
 Roelofse, Christian Eric (Elektroniese Ingenieurswese)  
 Rottcher, Carl-Hein (Siviele Ingenieurswese)  
 Sakala, Stephanie Tikambenji (Siviele Ingenieurswese)  
 Senda, Paul Tudieji (Meganiiese Ingenieurswese)  
 Sibanda, Clifford (Elektroniese Ingenieurswese)  
 Songeya, Godfrey Chabala (Siviele Ingenieurswese)  
 Steele, Tristan Stuart (Meganiiese Ingenieurswese)  
 Steenkamp, Nicol (Elektroniese Ingenieurswese)  
 Thomas, Michael Phillip (Siviele Ingenieurswese)  
 Tsalamandris, Philipas (Siviele Ingenieurswese)  
 Tshabalala, Ngobende (Siviele Ingenieurswese)  
 Tshindane, Pfano (Chemiese Ingenieurswese)  
 Umeh, Nicholas Ekene (Bedryfsingenieurswese)  
 Uys, Nardus (Chemiese Ingenieurswese)  
 Van den Berg, Christopher Sean (Meganiiese Ingenieurswese)  
 Van der Merwe, Dirk Jacobus Petrus (Siviele Ingenieurswese)  
 Van der Merwe, Edward (Ingenieursbestuur)  
 Van der Walt, Petro (Siviele Ingenieurswese)  
 Van der Walt, Taylor Andre (Siviele Ingenieurswese)  
 Van Jaarsveld, Ivan (Meganiiese Ingenieurswese)  
 Van Niekerk, Hester Christina (Bedryfsingenieurswese)  
 Van Rooyen, Jacobus (Chemiese Ingenieurswese)  
 Van Wageningen, Gerrit (Siviele Ingenieurswese)  
 Van Wyk, Ian Nicolaas (Megatroniese Ingenieurswese)  
 Van Zyl, Hermanus Petrus (Siviele Ingenieurswese)  
 Van Zyl, Stiaan (Siviele Ingenieurswese)  
 Viljoen, Du-Toit (Meganiiese Ingenieurswese)  
 Viljoen, Johannes Theodorus (Siviele Ingenieurswese)  
 Wattel, Jacques Willem (Elektroniese Ingenieurswese)  
 Wessels, Jurie Hendrik (Elektroniese Ingenieurswese)  
 West-Russell, Michael Alexander (Siviele Ingenieurswese)  
 Wium, Daniël Jacobus (Meganiiese Ingenieurswese)  
 Zvinokona, Admire Ruvimbo (Siviele Ingenieurswese)

**Magister in die Ingenieurswese Cum Laude  
Master of Engineering Cum Laude**

Abufalgha, Ayman (Chemiese Ingenieurswese)  
 Agenbach, Charles Johannes (Meganiiese Ingenieurswese)  
 Allan, Kathryn Mary (Chemiese Ingenieurswese)  
 Atkinson, Julian David (Meganiiese Ingenieurswese)  
 Basson, Ariel (Meganiiese Ingenieurswese)  
 Bierman, Carl Roos (Siviele Ingenieurswese)  
 Botha, Christoffel Daniel (Elektriese Ingenieurswese)  
 Broeksma, Cara Philipa (Ekstraktiewe Metallurgiese Ingenieurswese)  
 Buysse, Aaron James (Elektroniese Ingenieurswese)  
 Da Silva, Bradley (Meganiiese Ingenieurswese)  
 Dodson, Samuel Christopher Keightley (Elektriese Ingenieurswese)

Dorfling, Martinus David (Elektriese Ingenieurswese)  
Du Toit, Jessica (Meganiëse Ingenieurswese)  
Goosen, Gert Jacobus (Elektroniese Ingenieurswese)  
Henning, Adriaan Johannes (Ekstraktiewe Metallurgiese Ingenieurswese)  
Holtzhausen, Kurt Thomas (Siviele Ingenieurswese)  
Hom, Zander Christo (Ekstraktiewe Metallurgiese Ingenieurswese)  
Janse van Rensburg, Johannes Gerhard (Bedryfsingenieurswese)  
Janse van Vuuren, Jan Louis (Meganiëse Ingenieurswese)  
Khan, Mohammed Yaseen (Siviele Ingenieurswese)  
Kim, Hankyu (Elektroniese Ingenieurswese)  
Krog, Willem (Meganiëse Ingenieurswese)  
Kuhn, Wouter Jacobus (Ingenieursbestuur)  
Louw, Ridalise (Elektroniese Ingenieurswese)  
Marais, Annica (Ingenieursbestuur)  
Marx, Hendrig (Siviele Ingenieurswese)  
Mazibuko, Sebenzile (Chemiese Ingenieurswese)  
Nel, Charles Benjamin Hirshowitz (Ingenieursbestuur)  
Page, Dian Heinrich (Siviele Ingenieurswese)  
Pirow, Nicol Oswald (Elektroniese Ingenieurswese)  
Read, Matthew James (Bedryfsingenieurswese)  
Retief, Marthinus Johannes (Siviele Ingenieurswese)  
Roberts, Piemu Petrus Paulus (Chemiese Ingenieurswese)  
Roux, Marcel (Elektroniese Ingenieurswese)  
Scheffler, Otto Carl (Meganiëse Ingenieurswese)  
Sewraj, Keshav (Elektroniese Ingenieurswese)  
Smith, Gerard Hayden (Megatroniese Ingenieurswese)  
Terblanche, Wynand Dreyer (Elektriese Ingenieurswese)  
Van Nierop, Stacey Caitlin (Siviele Ingenieurswese)  
Van Rooyen, Nina Louise (Bedryfsingenieurswese)  
Van Zyl, Izaak (Elektroniese Ingenieurswese)  
Verrezen, Dylan (Elektroniese Ingenieurswese)  
Viviers, Christiaan Gunter Alwyn (Elektroniese Ingenieurswese)  
Wilke, Cornelis Rossouw (Elektroniese Ingenieurswese)

3

20 Maart | 20 March

17:00

**Fakulteite**

*AgriWetenskappe*

*Geneeskunde en Gesondheidswetenskappe*

**Faculties**

*AgriSciences*

*Medicine and Health Sciences*

## PROGRAM

- Staan asseblief* 1. Akademiese prosesie kom die saal binne.
- Staan asseblief* 2. Sing van die Nasionale Lied (kyk aan die binnekant van die agterblad).
- Sit asseblief* 3. Konstituering deur die Visekanselier.
4. Verwelkoming deur die Visekanselier en prof M Dlali.
5. Voorstelling van die eredoktorandi en toekenning van die eregrade deur die Visekanselier.
6. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Visekanselier.
7. Sluiting deur die Visekanselier.
- Staan asseblief* 8. Akademiese prosesie verlaat die verhoog.

## PROGRAMME

- Stand please* 1. Entrance of academic procession into the hall.
- Stand please* 2. Singing of the National Anthem (see inside back cover).
- Sit please* 3. Congregation formally constituted by the Vice-Chancellor.
4. Welcome by the Vice-Chancellor and Prof M Dlali.
5. Presentation of the candidates for the honorary doctorates and conferment of the degrees by the Vice-Chancellor.
6. Presentation of candidates receiving qualifications by the dean of the faculty and conferment of qualifications by the Vice-Chancellor.
7. Closing by the Vice-Chancellor.
- Stand please* 8. The academic procession leaves the stage.

## EREGRADE | HONORARY DEGREES

*Die graad Doktor in die Natuurwetenskappe (DSc), honoris causa, aan  
The degree Doctor of Science (DSc), honoris causa, to*

### PETER ANTHONY JONES

vir sy internasionale baanbrekerswerk ter bevordering van die mediese wetenskap en tegnologie, sy ontdekking van epigenetika en vernuftige omskakeling van sy uitvindings in kliniese behandelings wat miljoene kankerpatiënte wêreldwyd nuwe hoop bied, en sy voorbeeld van die innoverende gees waarna elke US-student moet streef.

Deur die uitwerking van 5-azasitidien op sitosienmetilering te ontdek, en die verband tussen DNS-metilering, geenuitdrukking en -differensiasie te bepaal, het professor Peter Anthony Jones, een van die Universiteit Stellenbosch (US) se voorste voormalige akademici, die mediese wetenskap bevorder en nuwe hoop vir kankerbehandeling wêreldwyd geskep.

Dié Kapenaar van geboorte is deesdae die hoof wetenskaplike beampte en direkteur van die Sentrum vir Epigenetika by die Van Andel-navorsingsinstituut in Michigan. Hy ontvang sy PhD- en nadoktorale opleiding oorsee, maar keer terug om as hoofnavorsingsbeampte in die Eenheid Molekulêre en Sellulêre Kardiologie van die US se Fakulteit Geneeskunde te dien. Hier braak hy nuwe grond met die ontdekking van epigenetika, wat later die toekoms van kankerbehandeling sou verander.

Jones ontdek dat 'n middel wat destyds as "aza-c" bekend was gene in 'n basiese menslike sel aanskakel wat die sel in 'n spiersel verander. As dit moontlik is, het hy gedink, kan dit stellig ook gene in kankerselle aanskakel en dit weer gesond maak. In 2009, meer as 30 jaar later, doen die toonaangewende mediese tydskrif *Lancet* verslag dat die oorlewingsyfer onder kankerpatiënte in 'n groot internasionale proef verhoog het van 26% op gewone chemoterapie tot meer as 50% op epigenetiese terapie met azasitidien. Nadat hy die waarde van epigenetiese terapie bewys het, werk Jones onverpoosd op soek na kliniese behandelings wat sy ontdekking op menslike kanker toepas. Hierdie gevierde wêreldspeler is onlangs in die Amerikaanse Nasionale Wetenskapakademie verkies ter erkenning van 40 jaar se prestasies op epigenetiese gebied. Sy baanbrekerswerk het hom vele eerbewyse besorg, soos die Kankervereniging van Suid-Afrika se AG Oetllé-prys, die Amerikaanse Nasionale Kankerinstituut se toekenning vir uitnemende navorsing, en die erepenning van die Amerikaanse Kankervereniging.

Die US is trots op sy verbintenis met professor Peter Jones. Met sy innoverende werk ter bevordering van die mediese wetenskap op wêreldvlak toon hy nie net besondere vaardigheid nie, maar verander hy voortdurend mense se lewens.

for his trailblazing work advancing medical science and technology globally by pioneering epigenetics and expertly translating his discoveries into clinical treatments, offering new hope for millions of cancer patients worldwide, and for exemplifying the innovative spirit to which every SU student should aspire.

Having discovered the effects of 5-azacytidine on cytosine methylation and established the link between DNA methylation, gene expression and differentiation, Professor Peter Jones, one of Stellenbosch University's leading former academics, has advanced medical science and brought new hope for cancer treatment worldwide.

Today a director at the Center for Epigenetics at the Van Andel Research Institute in Michigan, Cape Town-born Jones obtained his PhD and postdoctoral training abroad. He returned to serve as chief research officer at the Unit for Molecular and Cellular Cardiology of Stellenbosch University's Faculty of Medicine. Here, he discovered cancer's new frontier – epigenetics – which would later change the future of cancer treatment.

Jones discovered that a drug then called "aza-c" switched on genes in a basic human cell, turning it into a muscle cell. If that's possible, he thought, surely it could also switch on genes in cancerous cells, restoring them to health. In 2009, over 30 years later, top medical journal *Lancet* reported that the survival rate of cancer patients in a large international trial had increased from 26% using ordinary chemotherapy, to over 50% using epigenetic therapy with azacytidine. Having established the value of epigenetic therapy, Jones has steadfastly continued the search for clinical treatments, applying his discovery to human cancers.

A renowned global player, he was recently elected to the USA National Academy of Sciences in recognition of 40 years' accomplishments in the field of epigenetics. His ground-breaking work has garnered accolades such as the Cancer Association of South Africa's AG Oetllé award, the Outstanding Investigator grant from the USA National Cancer Institute, and the medal of honour from the American Cancer Society.

SU proudly associates with Professor Peter Jones. Through his trailblazing work advancing medical science globally, he has not only demonstrated immense skill, but continues to change people's lives.

*Die graad Doktor in die Natuurwetenskappe (DSc), honoris causa, aan  
The degree Doctor of Science (DSc), honoris causa, to*

### ANDRÉ E NEL

vir sy veelvuldige hoëvlak- en immer uitnemende bydraes tot die wetenskap van nanogeneeskunde, allergie en immunologie, wat nie net die mediese wetenskap en tegnologie wêreldwyd bevorder nie, maar 'n voortgesette tasbare impak het om die wêreld veilig, gesond en omgewingsvriendelik te maak.

Universiteit Stellenbosch- (US-)alumnus professor André E. Nel het met lewenslange toewyding aan mediese navorsing groot vooruitgang in die wetenskap van nanogeneeskunde, allergie en immunologie bewerkstellig.

Gedurende studie vir sy MB,ChB, MMed (Interne Geneeskunde) en MD het sy prestasies aan die US hom groot lof besorg, waaronder die goue medalje vir beste MB,ChB-student, die Hoeschtprys vir belowendste finalejaar- mediese student en die Dekansmedalje vir beste finalejaar- kliniese assistent. Deesdae is dié gevierde vakkundige 'n uitgelese professor aan die Universiteit van Kalifornië (UCLA), waar hy hoëvlakbydraes tot die wetenskap en samelewing lewer. Nel het UCLA se Afdeling Nanogeneeskunde gestig, en is tans direkteur van die Sentrum vir die Omgewingsimplikasies van Nanotegnologie, 'n fasiliteit van \$50 miljoen met finansiering van die Amerikaanse Nasionale Wetenskapstigting (NSF) en die Omgewingsbeskermingsagentskap. Hier bestudeer hy verantwoordelike nanotegnologiegebruik sodat gemeenskappe wêreldwyd steeds die voordele daarvan kan geniet sonder om die omgewing te benadeel. Verder is hy 'n leier in die ontwikkeling van nanogeneesmiddels vir pankreaskanker, waar navorsingsdeurbrake gelei het tot 'n beginbesigheid.

Weens sy spesialisvaardighede is hy aangestel in die evalueringspaneel van die Nasionale Nanotegnologie-inisiatief (NNI) vir die Amerikaanse presidensiële wetenskap-en-tegnologieadviesraad, sowel as 'n uitgelese NSF-paneel wat 'n omvattende regeringsvisie vir die ontwikkeling van Amerikaanse nanotegnologie-navorsing vir die volgende dekade moes saamstel. Namens die Nasionale Gesondheidsinstitute en NNI het hy samewerkende navorsingsooreenkomste met Japan, die Chinese Wetenskapakademie en Rusland onderteken. Dié mederedakteur van die toonaangewende internasionale vaktydskrif *ACS Nano* en gewilde spreker het al meer as 300 invloedryke publikasies die lig laat sien. Sy navorsing is die toonbeeld van relevansie vir die daaglikse lewe en het reeds op etlike patentaansoeke uitgeleed.

Eerbewyse vir Nel se wetenskaplike uitnemendheid is volop. Dié lid van die portuurverkose Beste Dokters van Amerika is onder meer die ontvanger van die goewerneursprys vir ekonomiese en omgewingsleierskap, Kalifornië se hoogste eerbewys op omgewingsgebied.

Ons is trots daarop om professor André Nel te vereer – met sy wortels op Stellenbosch, werk hy nou vir die wêreld.

for his multiple high-level and consistently excellent contributions to the science of nanomedicine, allergy and immunology, which have not only advanced medical science and technology globally, but continue to have a tangible impact in ensuring a safe, healthy and environmentally-friendly world.

Through his life-long commitment to medical sciences research, Stellenbosch University (SU) alumnus Professor André E. Nel has advanced the science of nanomedicine, allergy and immunology.

Holding an MB,ChB, MMed (Internal Medicine) and MD, his achievements studying at SU earned him high acclaim, including the gold medal for best MB,ChB student, the Hoescht prize for most promising final-year medical student and the Dean's medal for top final-year registrar. Today a distinguished professor at the University of California (UCLA), this renowned scholar is a high-impact contributor to science and society. Having founded UCLA's Division of NanoMedicine, Nel is director of the Center for the Environmental Implications of Nanotechnology, a \$50 million facility funded by the United States National Science Foundation (NSF) and Environmental Protection Agency. Here, he studies the responsible use of nanotechnology to ensure that communities worldwide can continue leveraging its benefits without harming the environment. He is also a leader in developing nanomedicines for pancreas cancer, with research breakthroughs leading to a startup company.

His specialised skills have resulted in his appointment as a member of the US President's Council of Advisors for Science and Technology panel for the review of the National Nanotechnology Initiative (NNI), as well as a distinguished NSF panel that produced a government vision for American nanotechnology research over the next decade. He has represented the National Institutes of Health and NNI in signing cooperative research agreements with Japan, the Chinese Academy of Sciences, and Russia. This associate editor of top-rated international journal *ACS Nano* and popular conference speaker has produced over 300 widely cited publications. Profoundly relevant to everyday life, his research has led to a large number of filed patents.

Accolades for Nel's scientific eminence abound. A member of the peer-selected Best Doctors of America, he has inter alia received California's highest environmental honour, the governor's economic and environmental leadership award.

We proudly honour Professor André Nel – a Stellenbosch University graduate working for the world.

**Die graad Doktor in die Natuurwetenskappe (DSc), honoris causa, aan  
The degree Doctor of Science (DSc), honoris causa, to**

**IMTIAZ ISMAIL SOOLIMAN**

vir die stigting van Gift of the Givers as 'n uitnemende werktuig vir noodleniging en hoop, die behendige toepassing van sy mediese opleiding om rampgeteisterde en kwesbare mense se lot te verbeter, en sy leierskap om ander te inspireer om ook die samelewing te dien.

Dr Imtiaz Ismail Sooliman en sy organisasie Gift of the Givers is sinoniem met noodleniging en hoop plaaslik en in die buiteland.

Sooliman, 'n MB,ChB-gegradueerde, het Gift of the Givers, deesdae die grootste nieregeringsorganisasie in Afrika, in 1992 gestig om alle mense, ongeag ras, kleur, geloof en geografiese ligging, onvoorwaardelik en met deemis en respek vir menswaardigheid te dien.

Die organisasie, wat uitsluitlik op skenkings deur gewone Suid-Afrikaners staatmaak, het die Bosniese konflik as eerste projek aangepak. Hier lewer Sooliman 780 ton materiële bystand af en ontwikkel hy 'n innoverende, selfstandige mobiele hospitaal uit vraghouers, met plek vir 130 pasiënte. Hy ontvang weinig internasionale steun en verkoop sy huis en sit sy lewenspolisse om in kontant om die hospitaal in bedryf te stel. Daarna skep hy soortgelyke gesondheidsorgklinieke uit vraghouers, wat hy in landelike gebiede van Suid-Afrika en Malawi plaas om maklike toegang tot sorg te bied. In die jare daarna reageer Gift of the Givers op die een internasionale ramp na die ander en voorsien bystand gedurende vloede, aardbewings, vulkaanuitbarstings, bomaanvalle, burgeroorloë en hongersnood wêreldwyd. Teen 2014 is Sooliman so gekonfyt in onderhandeling en die hantering van burokrasie dat hy 'n kernrol vervul om Pierre Korkie van Al-Qaeda-militante te probeer bevry. Die poging word ongelukkig op die nippertjie in die wiele gery.

Altyd op soek na maniere om beter bystand te verleen, stig Sooliman die Onderwyssteunprogram, die Jumpstart-entreprenersprogram en, saam met sy vrou Zohra, die krisisdienst Careline. Daarbenewens ontwikkel hy die voedingsaanvulling Sibusiso, wat rampgeteisterde groepe noodsaaklike mikrovoedingstowwe bied.

Eerbewyse vir sy merkwaardige prestasies sluit in die Presidensiële Orde van die Ster (1993), die Orde van die Kremetart (2010) en 'n toekening van die Pakistanse president Pervez Musharraf (2006).

Dr Imtiaz Sooliman se strewe om, ondanks uitdagings en gevaar, kwesbare mense te help, en sy vermoë om ander te inspireer om óók hulle medemens te dien, is kenmerkend van 'n leier wat erkenning van die Universiteit Stellenbosch verdien.

for having established Gift of the Givers as a renowned vehicle of hope and relief, for skilfully harnessing his medical training to improve disaster-stricken and vulnerable people's fate, and for his leadership in inspiring others to follow suit and serve society.

Dr Imtiaz Sooliman and his organisation Gift of the Givers have become synonymous with hope and relief locally and abroad.

In 1992, MB,ChB graduate Sooliman established Gift of the Givers, today Africa's largest non-governmental organisation, to serve people of all races, colours and creeds and in any geographic location, and to do so unconditionally, with compassion and respect for dignity.

Funded entirely by ordinary South Africans' donations, the organisation first tackled the Bosnian conflict. Here, Sooliman delivered 780 tons of material aid and developed an innovative, self-sufficient, 130-bed containerised mobile hospital. With little international support, he sold his home and cashed in his life policies to have the hospital commissioned. He later created similar containerised health clinics, which he placed in rural areas in South Africa and Malawi to provide easy access to care. In the years that followed, Gift of the Givers continued to respond to one international disaster after the other, providing aid during floods, earthquakes, volcanic eruptions, bombings, civil war and famine across the globe. By 2014, Sooliman had become so skilled in negotiating and dealing with bureaucracy that he played a key role in trying to secure Pierre Korkie's release from Al-Qaeda militants, which unfortunately was thwarted at the last moment.

Always seeking to provide improved aid, Sooliman has also established the Education Support Programme, the Jumpstart Entrepreneurial Programme, and partnered with wife Zohra to found Careline. Moreover, he has devised Sibusiso, a supplement providing disaster-stricken populations with essential micronutrients.

Awards recognising his remarkable achievements include the President's Order of the Star (1993), the Order of the Baobab (2010) and an award from Pakistan President Pervez Musharraf (2006).

Dr Imtiaz Sooliman's quest to assist the vulnerable despite multiple challenges and often risking his own safety, and his ability to inspire others also to serve their fellow man, mark a leader deserving of Stellenbosch University's recognition.

*Fakulteit AgriWetenskappe | Faculty of AgriSciences*

**Doktor in die Wysbegeerte  
Doctor of Philosophy**

AGHOGHOWWIA, Makhosazana Princess (Soil Science)

*Effect of different biochars on inorganic nitrogen availability*

Biochar is a soil amendment generally used for carbon sequestration. This study examined the effects of local biochars on nitrogen bioavailability in Cape sands. It was shown that biochars vary widely in their properties, which significantly affected soil carbon and nitrogen dynamics. All biochars were shown to strongly and non-reversibly adsorb nitrate compared to ammonium ions. Incubation studies showed that plant biochars enhanced microbial N immobilisation and suppressed respiration. Accordingly, selected plant biochars were able to improve retention of applied 15-N ammonium nitrate fertiliser by up to 157%. Biochars can thus be produced for specific agricultural or environmental applications.

**Supervisor: Dr AG Hardie**

**Co-supervisor: Dr A Rozanov**

BAGHERI, Bahareh (Wine Biotechnology)

*Evaluating the effect of environmental parameters on the dynamics of the wine yeast consortium*

A yeast consortium comprising species common in South African vineyards was constructed and used as a tool to decipher yeast interactions in wine fermentation ecosystems. The effect of biotic and abiotic parameters on the dynamics of the consortium was evaluated in different types of grape juice. Similar population dynamics trends were observed, irrespective of the matrix. Temperature proved to be the most influential parameter, affecting species persistence and wine aroma. The consortium was found to be a robust model that can be used as a tool to predict yeasts behaviours in natural fermentations mediated by complex yeasts communities.

**Supervisor: Dr ME Setati**

**Co-supervisor: Prof FF Bauer**

CHINGALA, Gregory (Animal Science)

*Beef production and quality of Malawi Zebu steers' fed diets containing rangeland-based protein sources under feedlot conditions*

The study evaluated smallholder farmers' perceptions towards climate change, their identification of potential protein sources during drought, the nutrition profile of these protein sources and their actual production value when fed to Malawi Zebu steers under feedlot conditions. Farmers perceived a decrease in rangeland production and animal performance. Farmers identified indigenous oil seeds and browse legume trees, including Baobab seeds and *Vachellia polyacantha*, as potential protein supplements. Feeding Baobab seed and soybean diets produced higher growth rates and heavier carcasses than *V. polyacantha*. Baobab seed and *V. polyacantha* diets, however, yielded dark, firm and dry meat.

**Supervisor: Dr C Mapiye**

**Co-supervisor: Prof K Dzama**

DU PLESSIS, Heinrich Wilbur (Wine Biotechnology)

*Effect of non-Saccharomyces yeasts and lactic acid bacteria interactions on wine flavour*

This study investigated interactions between the three major groups of microorganisms in wine production, namely *Saccharomyces* yeasts, non-*Saccharomyces* yeasts and lactic acid bacteria. Laboratory-scale screening elucidated non-*Saccharomyces* yeasts strain differentiation, fermentation ability, malic acid degradation and level of yeasts-bacteria inhibition. Subsequent small-scale Shiraz wine production trials evaluated a selection of these yeasts in three malolactic fermentation strategies. It was shown that yeast treatment and MLF strategy had significant effects on wine flavour and sensory profiles, especially regarding berry, vegetative, fruity and sweet associated aromas, as well as the acidity and astringency of wines.

**Supervisor: Dr N Jolly (external)**

**Co-supervisor: Prof M du Toit**

FAIRBAIRN, Samantha Carol (Wine Biotechnology)

*Defining the chemical features of wine perception*

Why does wine smell like wine? This question may appear straightforward. In fact, nobody knows. This study evaluated the impacts of grape must composition on the chemical profile of volatile compounds at the end of fermentation. The insights generated through this approach were used to design a synthetic grape juice that, after fermentation by wine yeasts, displayed a vinous character indistinguishable from real wine in a sensory analysis. The data suggest that the 'wine' character that distinguishes wine from other beverages, and allows consumers to categorise a product as wine, is entirely due to the metabolic activity of yeast.

**Supervisor: Prof FF Bauer**

**Co-supervisor: Prof AC da Silva Ferreira**

GARRIDO BANUELOS, Gonzalo (Oenology)

*Factors influencing the colour and phenolic composition of Shiraz wine during winemaking*

This study investigated factors such as vintage and different grape sugar and phenolic levels on wine phenolic composition and evolution during alcoholic fermentation and wine ageing. Grape cell wall polysaccharide composition was influenced by the vintage and grape sugar levels, which led to changes in wine phenolics levels. This study also employed advanced analytical techniques such as LCMS to ascertain the phenolic composition of the sediment in a model wine system with different phenolic ratios over time. This study brought novel information to the fore on phenolic extractability and evolution in Shiraz grapes and wine.

**Supervisor: Prof WJ du Toit**

**Co-supervisor: Dr A Buica**

## HALL, Stuart Alexander Warren (Conservation Ecology)

### *Restoration potential of alien-invaded lowland fynbos*

A novel means of assessing treatment effectiveness in habitat restoration was developed, resulting in practical management guidelines for future alien clearing in lowland fynbos. The effectiveness of different methods to restore vegetation degraded by invasive acacias was examined. This included the incorporation of managed fire along with alien clearing, as well as sowing seed of structural component species. Seeds were pre-treated as advised by determining effects of smoke and heat treatment on germination success. In addition to comparing field experiment data directly, vegetation recovery trends were incorporated into a dynamic model to extrapolate and predict long-term recovery trajectories and pinpoint restoration thresholds.

**Supervisor:** Prof KJ Esler

**Co-supervisors:** Prof PM Holmes (*external*) and Dr M Gaertner

## KANGUEEHI, Grace Nandesora (Viticulture)

### *Water footprints analysis to improve water use efficiency in table grape production. A case study in the Hex River Valley, Western Cape, South Africa*

This study aimed to evaluate the effects of differing cultivation and environmental effects on selected water footprint aspects of table grapes (*Vitis vinifera* L. cv. Crimson Seedless). Different vineyards showed great variability in terms of soil characteristics, vegetative and reproductive growth, and subsequently also water use efficiency (WUE) parameters. It was shown that drip-irrigated table grapes can have higher WUE<sub>irr</sub> and produce superior-quality grapes, implying that water may be saved if water deficits are applied in table grape vineyards. Blue water footprint analysis was also conducted for three regions in South Africa, and satellite technology evaluated to determine block water status.

**Supervisor:** Dr AE Strever

**Co-supervisor:** Ms E Avenant

## MOELICH, Erika Ilette (Food Science)

### *Development and validation of prediction models and rapid sensory methodologies to understand intrinsic bitterness of Cyclopia genistoides*

*Cyclopia* species are used for the production of honeybush tea. The aim was to understand intrinsic bitterness of honeybush tea, in particular that of *Cyclopia genistoides*. Making of bitterness by blending with other *Cyclopia* species, as well as identifying predictor polyphenols, received attention. Several rapid sensory profiling methodologies were evaluated to address the inherent bitterness of *C. genistoides* from a quality control perspective. Three rapid sensory methodologies were validated as quality control tools, using several sensometric methods. Recommendations in terms of suitable methods, depending on the specific application by the honeybush industry, could be made.

**Supervisor:** Prof E Joubert (*external*)

**Co-supervisor:** Ms M Muller

## MUNHUWEYI, Karen (Food Science)

### *Antimicrobial effects of chitosan and essential oils on postharvest diseases of pomegranate fruit*

Pomegranate fruit is highly susceptible to postharvest rots and decay, causing economic losses in industry. An analysis of pathogen incidence from orchard to postharvest showed that the flowering phase is a critical control point. *Botrytis*, *Penicillium* and *Pilidiella granati* were identified as major disease-causing pathogens affecting pomegranate. Treating fruit with chitosan alone or in combination with fungicides resulted in reduced spoilage and extended shelf life of fresh-cut arils

from 7 to 10 days. Encapsulating essential oils such as oregano and cinnamon into chitosan nanofibers showed good antifungal activity, and hence potential for incorporation into active packaging of pomegranates.

**Supervisor:** Prof UL Opara

**Co-supervisors:** Prof GO Sigge, Drs C Lennox and OJ Caleb (*external*)

## NEEDHAM, Tersia (Animal Science)

### *Immunocastration and its application in ram lambs*

Physical castration causes acute and chronic pain in lambs, despite using pain mitigation. The potential use of an immunocastration vaccine in Dohne Merino ram lambs was investigated by determining the influence on androgen biosynthesis, seminiferous tubule development, behaviour, growth performance, carcass traits and meat quality. Immunocastration suppressed testosterone secretion and spermatogenesis while improving the welfare of ram lambs compared to physical castrates, as indicated by decreased serum cortisol concentration and improved incidences of abnormal behaviours. Although growth, prime cut yield and instrumental meat quality were unaffected, the subcutaneous fat depth of the *Longissimus thoracis* muscle may be manipulated using immunocastration.

**Supervisor:** Prof LC Hoffman

**Co-supervisor:** Dr H Lambrechts

## NTLADI, Solomon Magwadi (Genetics)

### *Inheritance and mapping of morphological and agronomic traits in pear*

The pear breeding programme at the Agricultural Research Council (ARC) Infruitec-Nietvoorbij focuses on breeding new cultivars of European pear and improving agronomic traits such as blush skin, russet skin and adaptation to mild winters. In the current study, quantitative trait loci (QTL) for blush skin and flowering time were mapped in a progeny derived from cultivars 'Flamingo' and 'Abate Fetel'. The QTLs detected will facilitate breeding for improved skin colour and flowering time in lines deriving from these cultivars. Candidate genes associated with these traits were also tentatively identified for follow-up studies.

**Supervisor:** Prof R Roodt-Wilding

**Co-supervisor:** Mr K Tobutt (*external*)

## NYONI, Makomborero (Plant Pathology)

### *Spectrum of in vitro activity and efficacy of phosphonates for management of apple replant disease and oomycete root rot pathogens in South Africa*

Apple replant disease (ARD) and Phytophthora root rot are economically important soil-borne diseases of apples world-wide. The study showed that ARD can be managed using semi-selective chemicals (fenamiphos, metalaxyl, imidacloprid and phosphonates), which target the different groups of pathogens causing the disease. Some of the pathogens were shown to interact synergistically. The temporal nature of the translocation of phosphonate fungicides in apple trees was investigated using different fungicide application methods. The application of foliar sprays was the most cost-effective and resulted in good translocation of phosphonates to roots. Phosphonates were furthermore shown to have potential for managing Phytophthora root rot on apples.

**Supervisor:** Prof A McLeod

**Co-supervisor:** Prof M Mazzola (*external*)

## ORINA, Irene Nyangoge (Food Science)

### *Monitoring of fungal infection in maize with high resolution X-ray micro-computed tomography*

Maize is a staple food crop for millions, especially in Africa. However, it is susceptible to contamination with *Fusarium*, a group of plant pathogens that produce toxins harmful to humans and animals. Detecting contaminated maize is essential in ensuring food safety. This study showed that fungal damage to the maize's internal structure could be visualised and quantified non-destructively, using X-ray micro-computed tomography. This study demonstrated that, although X-ray micro-computed tomography cannot be used as a rapid technique for detection of fungal infection, it offers a better understanding of the effect of fungal damage on the microstructure of maize kernels over time.

**Supervisor:** Dr PJ Williams

**Co-supervisors:** Profs M Manley and GM Kenji (*external*)

## PIETERSE, Welma (Entomology)

### *A study on the biological and physiological traits of Bactrocera dorsalis, with special reference to its invasion potential into the Western Cape of South Africa*

The Oriental fruit fly invaded Africa in 2003 and is now present in the northern parts of South Africa. This fly has shown range expansion over the past 10 years within Africa, adapting to different climatic conditions and was found to be able to out-compete a number of local species in Africa. This study aimed to determine the invasive potential of the Oriental fruit fly in the Western Cape by studying the thermal biology, utilisation of deciduous fruit hosts and its competitive ability. A morphology-based identification tool for the larvae was developed to aid in early detection of the pest.

**Supervisor:** Dr P Addison

**Co-supervisors:** Prof JS Terblanche and Dr A Manrakhan (*external*)

## REBELO, Alanna Jane (Conservation Ecology)

### *Ecosystem services of Palmiet wetlands: The role of ecosystem composition and function*

Palmiet wetlands, valley-bottom wetlands occurring throughout the Cape Floristic Region of South Africa, were found to have decreased in extent by 31% since the 1940s. Channel erosion, as a result of degradation, has caused a change in water and soil quality and a shift in plant communities. Pristine palmiet wetlands were found to provide valuable ecosystem services to society, particularly the sequestration of carbon, water purification and flood attenuation. Degradation resulted in a decline in ecosystem service provision. The findings of this dissertation highlight the uniqueness and value of palmiet wetlands, making a case for their conservation and restoration.

**Supervisor:** Prof KJ Esler

**Co-supervisor:** Prof P Meire (*external*)

## RUGARE, Joyful Tatenda (Agronomy)

### *Allelopathic effects of green manure cover crops on the germination and growth of blackjack (Bidens pilosa L.) and goosegrass (Eleusine indica (L.) Gaertn)*

In this study, cover crop species were planted as rotational crops with maize under conservation agriculture conditions in Zimbabwe. A number of these cover crop species suppressed weeds in the production system. The two most promising cover crops suppressed germination and growth of the two most important broadleaved and grass weed species, but had no effect on maize. These suppressing effects were ascribed to allelopathy. Several active allelopathic

compounds were isolated and identified from these two cover crops. These cover crops have the potential to play a very important role in weed management in conservation agriculture among smallholder farmers.

**Supervisor:** Dr PJ Pieterse

**Co-supervisor:** Dr S Mabasa (*external*)

## SAEED, Manam (Conservation Ecology)

### *Assessment of degradation and prospects of rehabilitation of the arid rangelands in the Tanqua Karoo region, South Africa: Tankwa Karoo National Park as a case study*

The arid Tanqua region is perceived to be degraded due to overgrazing. This study used a multi-pronged approach to understand the ecosystem state in the Tankwa Karoo National Park. A study using remote sensing to investigate trends in vegetation production in the recent past revealed that the ecosystem is generally in a stable state. Some indications of degradation may be found in the existence of islands of fertility and in landscape functional features. A soil seedbank study, in conjunction with a vegetation study, revealed a dissimilarity between above- and belowground diversity and composition, which has implications for conservation management.

**Supervisor:** Dr SM Jacobs

**Co-supervisors (external):** Drs M Msubelele, I Samuels and L Khomo

## THERON-DE BRUIN, Natalie (Conservation Ecology)

### *Mite (Acari) ecology within Protea communities in the Cape Floristic region, South Africa*

Mites destroy crops, but some play vital roles in ecosystems. This study demonstrated that birds disperse a unique group of fungus-farming mites between *Protea* flowers. In this newly discovered mutualism, mites feed on their fungal partner and then attach to larger mites that, in turn, climb onto *Protea*-pollinating birds for dispersal. The larger mites eat *Protea* pollen and steal almost half of this resource without pollinating the flowers. It was also demonstrated that current chemical control of flower mites for *Protea* export are ineffective and only result in destroying essential soil-associated mite communities. Continued improvement of post-harvest pest management is needed.

**Supervisor:** Dr F Roets

**Co-supervisor:** Prof L Dreyer

## TREURNICHT, Martina (Conservation Ecology)

### *Demographic and functional determinants of large-scale population dynamics and ecological niches of 26 serotinous Proteaceae*

Developing a more refined understanding of species' responses to large-scale environmental variation is urgent in biodiversity research. Using the Hutchinsonian niche concept (i.e. the set of environmental conditions in which populations can grow), the study investigated how environmental conditions and functional traits affect the demography, population dynamics and ecological niches of 26 serotinous *Proteaceae* species from the Cape Floristic region. Using data sampled across species' entire geographical ranges, the research addressed fundamental and applied perspectives in ecology and conservation biogeography, and provides insights to develop more refined strategies to conserve biodiversity in a rapidly changing world.

**Supervisor:** Prof FM Schurr (*external*)

**Co-supervisors:** Prof KJ Esler, Drs J Pagel and J Slingsby (*external*)

WEIGHTMAN, Carla Jayne (Wine Biotechnology)

*Consumer attitudes and sensory perceptions of wine: A South African cross-cultural study*

The South African wine consumer landscape has changed dramatically in recent years. Despite low per capita wine consumption, market research identified positive growth potential for the local market. The South African wine industry is focused to become more consumer-driven through customised communication with future South African wine consumer segments. Towards this end, this study explored urban South African consumers' wine perceptions. Wine style preferences, occasions for enjoyment, purchase and consumption patterns and journeys towards wine consumption were explored in a cross-cultural study among urban South African wine-drinking consumers. Results showed only small ethnic group-related differences, but major gender (male/female-) related differences.

**Supervisor:** Dr HH Nieuwoudt

**Co-supervisors:** Profs FF Bauer, D Valentin (external) and NS Terblanche

## Doktor in die Wysbegeerte (Landbou) Doctor of Philosophy (Agriculture)

CARSTENS, Elma (Plant Pathology)

*Population structure, sex and spatial distribution of Phyllosticta citricarpa, the citris black spot pathogen*

*Phyllosticta citricarpa* is a fungal pathogen that causes citrus black spot, a disease of national and international importance. The study investigated the population genetic structure of the pathogen at global, regional and orchard scales. Populations from South Africa, Brazil, Australia and the United States showed high connectivity, likely due to the sharing of plant material. Two separate introductions of the pathogen most likely occurred into South Africa. All *P. citricarpa* populations reproduced sexually, but asexual reproduction was also important. Distance and season had an effect on the population structure of the pathogen in South Africa, but not citrus species.

**Supervisor:** Prof A McLeod

**Co-supervisor:** Dr CC Linde (external)

VAN COLLER, Gerhardus Johannes (Plant Pathology)

*The identification and management of toxigenic Fusarium species associated with wheat in South Africa*

*Fusarium* head blight (FHB) and *Fusarium* crown rot (FCR) of wheat are among the most destructive diseases of wheat globally. Comprehensive surveys were conducted to identify *Fusarium* species and mycotoxins associated with the diseases in South Africa. Field resistance to pathogens associated with FHB and FCR was determined, and fungicides were identified that reduce disease incidence and toxin levels in grain. This represents the first comprehensive study of FHB and FCR in South Africa, and provides a basis for future studies on the integrated disease management of FHB through host resistance and the optimal use of fungicides.

**Supervisor:** Prof A Viljoen

**Co-supervisor:** Dr S Lamprecht (external)

## Doktor in die Wysbegeerte (Bosbou) Doctor of Philosophy (Forestry)

HAM, Hannel (Forest Science)

*Investigating pollination success between Pinus radiata and selected pine species*

*Pinus radiata*, an important plantation forest species, is highly susceptible to *Fusarium circinatum* (pitch canker). Interspecific hybridisation with *Fusarium*-tolerant pines is difficult due to genetic distance. Factors that may affect pollination success between *P. radiata* and tolerant pines were uncovered, namely (a) Temperature regimes at seed orchards in *P. radiata* growing areas are not well matched with conditions where tolerant species flourish and (b) Pollen grain size and pollen tube growth rate of tolerant species were not comparable to that of *P. radiata*. Data collected indicated that *P. elliotii* and *P. taeda* are the most promising hybridisation partners for *P. radiata*.

**Supervisor:** Prof B du Toit

**Co-supervisors:** Dr A Kanzler (external) and Prof A-M Botha-Oberholster

## Fakulteit Geneeskunde en Gesondheidswetenskappe Faculty of Medicine and Health Sciences

## Doktor in die Wysbegeerte Doctor of Philosophy

ASMAL, Laila (Psychiatry)

*Brain structural and white matter changes in first-episode schizophrenia and their demographic, clinical and cognitive correlates*

This study integrates the findings of five manuscripts examining brain magnetic resonance imaging and clinical features of first-episode schizophrenia. In the first two manuscripts, lower fractional anisotropy predicted poorer insight and symptom misattribution predicted thinner frontal cortices. In the third manuscript, fractional anisotropy deficits in cortico-limbic circuitry were associated with childhood trauma in patients, with differential effects for emotional neglect and sexual abuse. For the fourth manuscript, baseline brain measures were associated with state and trait symptom expression over 12 months. For the final manuscript, antipsychotic dose was a predictor that reduced brain volume over 12 months of treatment.

**Supervisor:** Prof RA Emsley

**Co-supervisor:** Prof P Dazzan (external)

AYAD, Bashir Mohamed (Medical Physiology)

*Basic semen parameters assisted by computer-aided sperm analysis (CASA) and their correlations with advanced semen parameters in normozoospermic men with different abstinence periods*

Idiopathic male factor infertility is on the increase and treatment strategies remain inadequate or invasive. Cutting-edge techniques were used to show that shortened ejaculatory abstinence periods, of as little as four hours, yielded spermatozoa with superior functional qualities. The study was furthermore able to predict advanced semen parameters, in consecutive ejaculates, from a subset of basic semen parameters through a multiple linear regression model. The findings of this archetypal study not only challenges the generally accepted World Health Organization prescribed guidelines on abstinence, but also has profound implications for the development of novel and non-invasive strategies for the treatment of male factor infertility.

**Supervisor:** Prof SS du Plessis

**Co-supervisor:** Prof G van der Horst

BOCK, Peter Alwin (Paediatrics and Child Health)

*The impact of the HPTN 071 (PopART) intervention on mortality and AIDS-related morbidity amongst HIV positive adults in South Africa*

The WHO now recommends that ART be given to all HIV positive individuals regardless of their CD4 count. The work for this dissertation was done before this policy and found that provision of ART to individuals with high CD4 counts resulted in a 63% reduction in incidence of TB and that there was no association between baseline CD4 count and renal dysfunction. However, ART initiated at high CD4 counts was associated with higher attrition. Household-based HIV testing, supported by rigorous quality control and quality assurance, is effective in increasing HIV testing uptake. These benefits and challenges should be a priority for the Department of Health.

**Supervisor:** Prof N Beyers

**Co-supervisor:** Dr S Fidler (external)

CHISOMPOLA, Namaunga (Molecular Biology)

*Genetic characterisation of drug-resistant clinical isolates of Mycobacterium tuberculosis circulating within the Copperbelt province and northern regions of Zambia*

This study addressed critical knowledge gaps in our understanding of the transmission dynamics of drug-resistant tuberculosis in Zambia. Of particular mention, the study was the first to use whole-genome sequencing to describe the transmission dynamics of drug-resistant tuberculosis in Zambia. Further, the findings showed that diverse genotypes are driving the epidemic, and the study gave a first insight into the genotypes associated with extensively drug-resistant tuberculosis in Zambia. These findings will be highly beneficial to the national tuberculosis control programme in Zambia as well as regional and global tuberculosis researchers.

**Supervisor:** Prof SL Sampson

**Co-supervisors:** Dr EM Streicher and Prof RM Warren

CROWLEY, Talitha (Nursing)

*The conceptualisation and measurement of adolescent HIV self-management in a South African context*

Adolescents negotiate a complex development phase, and when suffering from HIV, find it difficult to maintain ARV adherence and a healthy lifestyle. Dealing with such requires an ability to self-manage an array of challenges. Self-management as a construct is poorly researched, especially in this population. South Africa has a high number of HIV positive adolescents. This study provided a carefully crafted instrument to assist health workers and researchers to measure and understand the self-management capacity of adolescents in their care. Whilst developed in the Western Cape, the instrument may be useful in a wider context.

**Supervisor:** Dr D Skinner

**Co-supervisor:** Prof AS van der Merwe

DORUYTER, Alexander Govert George (Nuclear Medicine)

*Social anxiety disorder: Functional neuroimaging and social cognitive features*

Functional magnetic resonance imaging and positron emission tomography, combined with state-of-the-art analysis, were used to study resting brain networks, regional glucose metabolism and monetary reward processing in SAD compared to controls, and how these are affected by treatment. Important findings include several disruptions to resting-state functional connectivity, and evidence for treatment effects in networks implicated in social cognition. Disorder-specific disruptions to regional brain metabolism or monetary reward processing were not detected. The results provide new insights into possible mechanisms underlying SAD and treatment effects, and inform the design of future neuroimaging experiments.

**Supervisor:** Prof J Warwick

**Co-supervisor:** Prof C Lochner

DUNBAR, Rory (Paediatrics and Child Health)

*How can virtual implementation modelling inform the scale-up of new molecular diagnostic tools for tuberculosis?*

The expected increase in tuberculosis cases using a new, more sensitive molecular diagnostic test, Gene Xpert, was not seen, but the cost per tuberculosis case increased by 157%. An operational model was developed and validated to explain why the expected increase

was not seen and to identify ways to address the high cost. The model indicated that if health systems were optimised, there would be a slight increase in the number of tuberculosis cases, and a 95% increase in drug-resistant TB cases compared to previous tests. A combination of improved health systems and reduced test costs is required to ensure affordability.

**Supervisor:** Prof N Beyers

**Co-supervisors:** Dr P Naidoo and Dr I Langley (*external*)

**JACOBS, Frans Alexander (Internal Medicine)**

*The modulation of bone stem cell fate by glucocorticoids and vanadate*

Chronic glucocorticoid administration can result in preosteoblasts becoming adipocytes. This decreases the number of bone-forming osteoblasts and bone density and increases marrow fat and the risk of bone fracture. In this study, a novel type of progenitor cell was isolated from the proximal femur and compared to those within bone marrow. These stem cells were found to be highly sensitive to glucocorticoids, readily differentiate into adipocytes and, unusually, express markers of brown fat. Although the negative effects of glucocorticoids could not be abated by vanadate, these novel cells are a possible pharmacological target for the prevention of glucocorticoid-induced osteoporosis in the future.

**Supervisor:** Prof WF Ferris

**Co-supervisor:** Dr H Sadie-van Gijsen

**KAMAU, Festus (Medical Physiology)**

*Contribution of highly active anti-retroviral therapy to the development of non-alcoholic fatty liver disease with concomitant cardiovascular dysfunction in an obese rat model*

Highly active antiretroviral therapy (HAART) reduces HIV/AIDS mortality. However, obesity, non-alcoholic fatty liver disease (NAFLD) and cardiovascular disease (CVD) rates are rising in treated HIV-infected populations. Accordingly, this study assessed HAART-induced NAFLD and CVD in a high-calorie diet-induced obesity rat model, combined with PPAR  $\alpha/\gamma$  stimulation to improve HAART-induced liver, metabolic and cardiovascular complications. This study demonstrated metabolic, functional and signalling derangements in the livers, hearts and aortas of HAART-treated obese rats, which were prevented by co-treatment with the dual PPAR  $\alpha/\gamma$  agonist, Saroglitazar. Since HAART aggravates CVD risk factors in obese patients, co-treatment with Saroglitazar may have therapeutic value.

**Supervisor:** Dr R Salie

**Co-supervisors:** Prof H Strijdom and Dr P Waweru (*external*)

**LEIBBRANDT, Dominique Claire (Physiotherapy)**

*The development of a contextualised evidence-based clinical practice guideline for the primary healthcare of chronic musculoskeletal pain in the Western Cape, South Africa*

Anterior knee pain is a chronic and complex condition that impairs function. This doctoral research project assessed the effect of an individualised functional retraining intervention on kinematic contributing factors, pain, function and self-reported recovery in people with anterior knee pain. An evidence-based decision-making algorithm was developed in addition to a functional retraining intervention. The findings showed that this innovative intervention was effective in the short term and at a six-month follow-up period. Healthcare professionals should be educated on common biomechanical contributing factors and how to tailor management according to an individual's specific needs.

**Supervisor:** Prof QA Louw

**Co-supervisor:** Dr JH Muller

**MARX, Florian Michael (Paediatrics and Child Health)**

*Mathematical modelling to project the impact of interventions targeted to previously treated individuals on the trajectory of the tuberculosis epidemic in high tuberculosis prevalence settings*

Individuals previously treated for tuberculosis constitute an important high-risk group. The candidate showed that even successfully treated patients remain at high tuberculosis risk, and that disease recurrence contributes substantially to detected and undetected TB in high-incidence settings. Molecular strain-type analysis revealed distinct temporal dynamics of relapse and reinfection tuberculosis. Relapse occurs early, but reinfection tuberculosis remains high over several years after treatment completion. Mathematical modelling showed that focused interventions to detect and prevent tuberculosis among former TB patients could substantially reduce transmission in the entire local population. This dissertation thus highlights a novel idea for strengthening TB control in high-incidence settings.

**Supervisor:** Prof N Beyers

**Co-supervisor:** Prof T Cohen (*external*)

**MEEHAN, Sue-Ann (Paediatrics and Child Health)**

*The contribution of a community-based HIV counselling and testing (HCT) Initiative in working towards increasing access to HIV counselling and testing in Cape Town, South Africa*

Government clinics on their own, and especially since few men attend clinics, cannot achieve the first goal of the UNAIDS 90-90-90 strategy of 90% of HIV-positive people knowing their status. The candidate established community-based units where more than 180 000 people with a high proportion of males were tested for HIV. Mobile services provided an immediate opportunity to test for those walking past and not thinking about having an HIV test at that time. Waiting times were significantly shorter at mobile units. Many HIV-positive individuals linked to clinics to start treatment. These findings provide key recommendations for the Department of Health.

**Supervisor:** Prof N Beyers

**Co-supervisor:** Prof R Burger

**MUBUJKE, Aloysuis Gonzaga (Health Professions Education)**

*Exploring health sciences students' experiences of feedback in a problem-based learning tutorial: A case study in an African medical school*

Problem-based learning is a student-centred educational approach enabling collaborative problem solving and reflection on learning. It enables students to take charge of their own learning, conduct research, integrate theory and practice, and apply knowledge and skills. Students construct their own knowledge and regulate their own learning activities to achieve the intended learning outcomes. In this context, feedback is crucial. This study aimed to explore students' experiences of and responses to tutor feedback. Findings from the study contribute to the knowledge on the subject of feedback and a key outcome was the development of a structured feedback tool for PBL tutors.

**Supervisor:** Dr AJN Louw

**Co-supervisor:** Prof SC van Schalkwyk

**PRINCE, Deidre Mabel (Nuclear Medicine)**

*Investigation into various aspects of radiolabelling somatostatin peptide derivatives with <sup>68</sup>Ga eluted from a SnO<sub>2</sub>-based <sup>68</sup>Ge/<sup>68</sup>Ga generator*

Germanium-68/gallium-68 (<sup>68</sup>Ge/<sup>68</sup>Ga) generators with widely differing properties provide <sup>68</sup>Ga for diagnostic imaging. This study investigated the South African-produced tin dioxide-based generator, aiming to optimise peptide labelling specifically with <sup>68</sup>Ga from this generator. Methods to reduce eluate volume, <sup>68</sup>Ge breakthrough and

metal contamination were optimised. Radiolabelling after cationic eluate processing was successfully adapted, providing a practical <sup>68</sup>Ga labelling method for somatostatin analogues for tumour imaging. Convenient user-friendly kit formulations were developed. Cationic eluate processing was shown to be best suited for <sup>68</sup>Ga radiolabelling of somatostatin analogues. The study's recommendations are valuable for all users of this <sup>68</sup>Ge/<sup>68</sup>Ga generator.

**Supervisor:** Prof S Rubow

**Co-supervisor:** Dr DD Rossouw (*external*)

**ROHWER, Anke Cornelia (Public Health)**

*Research integrity in reporting health research: Perceptions and experiences regarding plagiarism, conflict of interest and authorship criteria in low- and middle-income countries*

This study investigated perceived and actual health research reporting practices in low-and middle-income countries (LMICs). It entailed a systematic review of existing literature, surveyed and interviewed LMIC researchers, analysed policies and author guidelines of African biomedical journals, measured plagiarism in published articles and piloted a workshop in Malawi and Nigeria. The findings showed that researchers across LMICs are concerned about poor practices, especially about widespread guest authorship. Conflicts of interest are poorly understood and not declared. Actual rates of plagiarism in African biomedical articles are high. The desire for academic status, institutional requirements for promotion and organisational culture fuel bad practices.

**Supervisor:** Prof T Young

**Co-supervisors (external):** Prof P Garner and Dr E Wager

**SCOTT, Chantelle Jennifer (Human Genetics)**

*Understanding decision-making regarding prenatal diagnostic testing for Down syndrome and termination of pregnancy: An interpretive phenomenological study*

An interpretive phenomenological approach was used to gain an understanding of how women/couples attending the prenatal clinic at Tygerberg Hospital experience their decision-making process regarding prenatal diagnosis (PND) for Down syndrome (DS) and termination of pregnancy (TOP). This study highlighted the complexity of making these decisions and indicated several factors influencing their decisions. Each decision had a major impact on the women's/ couples' psychological well-being, interpersonal relationships and daily lives. The findings were integrated into a practice guideline specific to the South African context to assist in the provision of decisional support within the prenatal setting in order to limit the long-term negative impact these decisions may have.

**Supervisor:** Dr D Skinner

**Co-supervisor:** Prof S Seedat

**SMIT, Derick Peter (Ophthalmology)**

*An investigation into the causes of intraocular inflammation in HIV-positive and HIV-negative patients in the Western Cape province, South Africa*

Clinicians worldwide find it difficult to accurately determine the aetiology of potentially blinding intraocular inflammation or uveitis. The candidate prospectively studied 106 patients with uveitis and described the local disease patterns. In contrast to other parts of the world where many cases of uveitis remain idiopathic, an underlying cause was identified in 83% of cases. This finding resulted in targeted treatment approaches, thus reducing the risk of permanent loss of vision. Novel diagnostic techniques and alterations to current classifications were proposed. A new management algorithm was created to assist clinicians in the diagnostic workup of patients with uveitis.

**Supervisor:** Prof D Meyer

**SYLVESTER, Tashnica Taime (Molecular Biology)**

*The immunology of Mycobacterium bovis infection in feline immunodeficiency virus-infected African lions (Panthera leo)*

African lion numbers have declined in the wild and tuberculosis (TB), caused by *Mycobacterium bovis*, has contributed to morbidity and mortality in threatened populations. A diagnostic assay measuring CXCL9 gene expression in blood was developed and used to show that 44% of lions in the Kruger National Park are infected with *M. bovis*. Additionally, assays measuring expression of nine immune genes were developed and used to show that the feline immunodeficiency virus does not affect TB-specific immunity in this species. Lastly, a flow cytometric assay was optimised and used to describe novel phenotypic characteristics of lion lymphocytes.

**Supervisor:** Dr S Parsons

**Co-supervisor:** Prof M Miller

**VAN RENSBURG, Lyne (Farmakologie)**

*Immunoactive antibacterial and drug-carrying properties of selective surfactants*

Teen die agtergrond van pulmonêre surfaktantvervangings terapie vir gebruik in die behandeling van neonatale respiratoriese noodindroom, het hierdie omvangryke studie die ondersteunende gebruik van 'n nuut gesintetiseerde pulmonêre surfaktant, Synsurf®, ontleed vir infeksie en inflammatoriese longtoestande. Resultate verkry vir die doeltreffendheid van Synsurf® in kombinasie met die antibiotikum linezolid as 'n inasembare verbinding in 'n drukinhalator het gedui op die moontlike aanpasbaarheid daarvan as 'n draer vir pulmonêre middels. Daarbenewens het tuberkulose-isolate verhoogde vatbaarheid vir mikropartikel-surfaktantmiddelkombinasies getoon. Die hoofbevinding van die studie het getoon dat Synsurf® die afskeiding van pro-inflammatoriese sitokiene in alveolêre makrofage moduleer en 'n invloed het op die produksie van reaktiewe suurstofspesies en dus op sellewensvatbaarheid.

**Promotor:** Prof JM van Zyl

**Medepromotor:** Prof J Smith

**VISSER, Hanri (Molecular Biology)**

*Investigating the potential antimycobacterial effect of novel polycyclic compounds on Mycobacterium tuberculosis*

This study addressed the identification of novel anti-tuberculosis treatment followed by further characterisation of the most promising candidate compound. This promising compound was identified through activity screening against *Mycobacterium tuberculosis* following exposure. Subsequent characterisation of the most promising compound included determining the intracellular activity of the compound and identifying possible genetic variants which cause resistance to the compound. The results of these characterisation steps showed that this promising candidate was active against tuberculosis within the host cell and shared a resistance mechanism with compounds currently in development, further supporting it as a promising anti-tuberculosis candidate compound for further development.

**Supervisor:** Prof SL Sampson

**Co-supervisors:** Dr EM Streicher and Prof S Malan (*external*)



*Fakulteit AgriWetenskappe | Faculty of AgriSciences*

**Baccalaureus in die Natuurwetenskappe in Landbou Bachelor of Science in Agriculture**

Booyesen, Vuyokazi (Landbou-Ekonomiese Analise en Bestuur)  
 Botha, Tuscany Elizabeth Almira (Hortologie en Landbou-Ekonomie)  
 Brink, Jean Andre Jordaan (Veekunde)  
 Cyster, Amoré Chanté (Grondkunde en Plantpatologie)  
 Du Plessis, Jean (Veekunde)  
 Genis, Thea (Hortologie en Genetika)  
 Herholdt, Léze Maureen (Wingerd- en Wynkunde)  
 Humphries, Jonathan (Landbou-Ekonomiese Analise en Bestuur)  
 Kayster, Anthono Carlo (Grondkunde en Chemie)  
 Kotze, Michael John (Wingerd- en Wynkunde)  
 Mashaya, Rufaro Talent (Landbou-Ekonomiese Analise en Bestuur)  
 Scholtz, Diederik Arnoldus (Grondkunde en Hortologie)  
 Scholtz, Rainard (Veekunde met Akwakultuur)  
 Smit, Marjean (Wingerd- en Wynkunde)  
 Van Dyk, Petrus Johannes (Veekunde)  
 Van Niekerk, Hendrik Albertus Cornelis (Wingerd- en Wynkunde)  
 Victor, Lieben Rabie (Landbou-Ekonomie met Veekunde)  
 Volschenk, Pierre John (Landbou-Ekonomie met Voedselwetenskap)

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Meyer, Warren Johan (Landbou-Ekonomiese Analise en Bestuur)

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 Dlamini, Tenele Unity (Bosbou- en Natuurlike Hulpbronwetenskappe)  
 Kuluse, Jillian (Bosbou- en Natuurlike Hulpbronwetenskappe)  
 Rutherfoord, Callum Leslie (Bosbou- en Natuurlike Hulpbronwetenskappe)  
 Sibiya, Gabigabi (Bosbou- en Natuurlike Hulpbronwetenskappe)  
 Sibiya, Zimbili Bonisiwe (Bosbou- en Natuurlike Hulpbronwetenskappe)  
 Titus, Garthwin Ralph (Hout en Houtprodukkunde)  
 Zondo, Nondumiso Beryl (Bosbou- en Natuurlike Hulpbronwetenskappe)

**Baccalaureus in die Natuurwetenskappe in Bewaringsekologie Bachelor of Science in Conservation Ecology**

Joseph, Azeezah

**Baccalaureus in die Natuurwetenskappe in Voedselwetenskap Bachelor of Science in Food Science**

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 Assim, Muhammad (Voedselwetenskap met Biochemie)  
 Bamard, Anke (Voedselwetenskap met Biochemie)  
 Bolters, Robyn Leigh (Voedselwetenskap met Biochemie)  
 Du Toit, Carla (Voedselwetenskap met Biochemie)  
 Langeveldt, Juanine (Voedselwetenskap met Chemie)  
 Makhubo, Qhakazile Angel (Voedselwetenskap met Biochemie)  
 Mokonotela, Tshupo Tshiamo (Voedselwetenskap met Biochemie)  
 Sekele, Yolanda Naledi (Voedselwetenskap met Chemie)

Vilakazi, Thando Angelinah (Voedselwetenskap met Chemie)  
 Walters, Celia (Voedselwetenskap met Biochemie)

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 Marais, Julize  
 Ngwenya, Ntokozo Nomalanga  
 Steenkamp, Lodewyk Jacob

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 Gqwesa, Vatiswa Valencia  
 Le Roux, Ronald  
 Mattison, Nicholas Patrick  
 Mento, Jeromeo Elhiko  
 Oberholzer, Malandrie  
 Obermeyer, Carl Wilhelm  
 Pietersen, Nelda  
 Rautenbach, Reece  
 Snyman, Willem Viljoen  
 Strydom, David Coenraad  
 Terblanche, Ruben Pieter  
 Uys, Johannes Petrus  
 Van den Heever, Kim  
 Van der Merwe, Jacobus Johannes  
 Wilken, Nelia  
 Young, Heinrich

**Nagraadse Diploma in Bosbou- en Houtwetenskappe Postgraduate Diploma in Forestry and Wood Science**

Lukhele, Menzi Sibusiso

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Terblanche, Marius

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Le Roux, Shimé (Wynbiotegnologie)  
 Van Zyl, Tinneke (Toegepaste Plantfisiologie)

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Smit, Danel (Toegepaste Plantfisiologie)  
 Van Zyl, Wilmé (Toegepaste Plantfisiologie)

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Greyling, Christelle (Landbou-Ekonomie)

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 Botma, Izak Johannes (Wynbiotegnologie)  
 Cloete, Benjamin Patrick (Plantpatologie)  
 Engelbrecht, Nina Margaret (Volhoubare Landbou)  
 Jordaan, Gerhardus Paulus (Volhoubare Landbou)  
 Mahanjana, Aviwe (Volhoubare Landbou)  
 Mandigora, Brian George (Volhoubare Landbou)  
 Maphleba, Andiswa (Wynbiotegnologie)  
 Phokane, Sylvia (Plantpatologie)  
 Sithole, Philemon (Volhoubare Landbou)  
 Swart, Laurika (Plantpatologie)  
 Tshililo, Precious (Entomologie)

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 Simpson, Zoe Faith (Wynbiotegnologie)

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 Dinwa, Siziphiwe (Grondkunde)  
 Du Plessis, Dianca (Veekunde)  
 Firth, Deborah Caitlin (Akwakultuur)  
 Gericke, Rian (Agronomie)  
 Groenewald, Niklaas Jakobus (Veekunde)  
 Gulyas, Jenna Lara (Veekunde)  
 Harrison, Ruari (Veekunde)  
 Janse van Vuuren, Liaan (Hortologie)  
 Jansen, Zach (Veekunde)  
 Kahl, Comelia Erika Iris (Veekunde)  
 Kawhena, Tatenda Gift (Hortologie)  
 Le Roux, Eugene (Hortologie)  
 Le Roux, Pieter Johannes Grobler (Agronomie)  
 Lourenco, Marcello (Grondkunde)  
 Matebeni, Fezeka (Landbou-Ekonomie)  
 Muvhali, Pfunzo Tonny (Veekunde)  
 Neethling, Paul Johannes (Agronomie)  
 Nutt, John James (Wynkunde)  
 Odendaal, Maryna (Nematologie)  
 Phoofolo, Makhetha Lambert (Landbou-Ekonomie)  
 Stofberg, Aline (Grondkunde)  
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 Du Toit, Frans Paulus (Landbou-Ekonomie)  
 Gobozi, Thamsanqa Khanya Sikho (Grondkunde)  
 Jayne, Ryan (Landbou-Ekonomie)  
 Joao, Samantha Ann (Veekunde)

Jordaan, Bernhard (Agronomie)  
 Kirstein, Mark Ben (Veekunde)  
 Laubser, Johannes Gerhardus (Veekunde)  
 Matsikidze, Stenford Ngonidzashe (Hortologie)  
 Niemann, Gert Jacobus (Veekunde)  
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 Heita, Hleni Twitileni Ndeshipanda (Boskunde)  
 Malinga, Sithembile (Boskunde)  
 Marais, Brendan Nicholas (Boskunde)  
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 Wenhold, Roland Marius (Boskunde)

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 Sishi, Manzimase  
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 Yanco, Loriane Jennifer Ayo-Ola

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 Kleyn, Megan Elizabeth  
 Tobin, Jade

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Chiyangwa, Tafadzwa (Landbou-ekonomie)  
 Dlikilili, Xolela (Landbou-ekonomie)

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*Faculty of Medicine and Health Sciences*

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Jonas, Viwe  
Pietersen, Nadia  
Samsodien, Neelufar  
Sibiya, Nompumelelo Precious  
Sylvester, Craig Evan  
Toufie, Nabeela  
Tovhakale, Gundo Ephraim  
Williams, Mome

**Baccalaureus in Arbeidsterapie**  
**Bachelor of Occupational Therapy**

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Naicker, Talisha  
Rakhetla, Masetjhaba Joyce

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**Bachelor of Science in Dietetics Cum Laude**

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**Postgraduate Diploma in Nursing**

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Aziz, Melissa (Kritieke Sorg)  
Bangani, Onga (Kritieke Sorg)  
Bati, Nosipho Rose (Verpleegbestuur)  
Binza, Diana Bereniece (Primêre Gesondheidsorg)  
Botha, Linda Amanda (Verpleegbestuur)  
Bruitjies, Francis Macdaleen (Operasiesaalverpleegkunde)  
Cloete, Alice Annie (Verpleegbestuur)  
Cloete, Mashel (Gevorderde Psigiatryse Verpleegkunde)  
Dabula, Luvokazi (Primêre Gesondheidsorg)  
Debesha, Stanley (Verpleegbestuur)  
Dreyer, Jonathan (Verpleegbestuur)  
Dweku, Zandile Patience (Verpleegonderwys)  
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Hartman, Anne Magrieta (Primêre Gesondheidsorg)  
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Henama, Honjiswa (Kritieke Sorg)  
Jongile, Nomhlamnye (Primêre Gesondheidsorg)  
Josiah, Jo-Anne (Verpleegbestuur)  
Keseni, Sive (Verpleegonderwys)  
Kiewiets, Tersia (Verpleegbestuur)  
Koopman, Leonie Elsie (Verpleegbestuur)  
Kortje, Sandra Magdalene (Verpleegbestuur)

Lekaota, Ntshiuwa Cynthia (Verpleegbestuur)  
Madola, Nomthandazo Princess (Verpleegbestuur)  
Madosi, Ziyanda (Verpleegonderwys)  
May, Maureece (Verpleegbestuur)  
Mbambo, Jabulile Temparence (Verpleegonderwys)  
Mdlokolo, Sindiswa Sylvia (Verpleegbestuur)  
Meyer, Shamiel (Gevorderde Psigiatryse Verpleegkunde)  
Mgweba, Andisiwe Goodness (Primêre Gesondheidsorg)  
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Moreira, Ilze (Verpleegbestuur)  
Mosehla, Senyeki Isaac (Gevorderde Psigiatryse Verpleegkunde)  
Motolla, Kedibone Constance (Verpleegbestuur)  
Mtati, Yolanda (Verpleegbestuur)  
Munkanda, Waltraud (Verpleegonderwys)  
Ngceni, Nwabisa (Primêre Gesondheidsorg)  
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Nkuna, Cylia Josephine (Gevorderde Psigiatryse Verpleegkunde)  
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Palm, Virgil Andre Peter (Verpleegbestuur)  
Pule, Mapapali (Verpleegonderwys)  
Rheeder-Jooste, Katinka (Verpleegbestuur)  
Robinson, Emmarentia (Verpleegbestuur)  
Sekotlo, Moselantja Patricia (Verpleegonderwys)  
Senama, Pitsi Hendricca (Verpleegbestuur)  
Simons, Winnifred Nicolene (Verpleegbestuur)  
Siwa, Nolwandle Letticia (Kritieke Sorg)  
Skippers, Sandra Juliana (Verpleegbestuur)  
Small, Darshani Joycelyn (Verpleegonderwys)  
Smit, Elizabeth Johanna Dorothea (Verpleegonderwys)  
Thai, Tlotlisang (Verpleegonderwys)  
Twala, Nduku Simon (Verpleegbestuur)  
Van Rooi, Stephanie Gerda (Verpleegbestuur)  
Vumani, Tembeka (Verpleegonderwys)  
Zani, Lydia (Primêre Gesondheidsorg)

**Nagraadse Diploma in Verpleegkunde Cum Laude**  
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Mayoyo, Christine Kwamboka (Gevorderde Verloskundige en Neonatologiese Verpleegkunde)  
Voigt, Lizelle Dianne (Gevorderde Verloskundige en Neonatologiese Verpleegkunde)

**Nagraadse Diploma in Beroepsgeneeskunde**  
**Postgraduate Diploma in Occupational Medicine**

Kenny, Vincent Sakhi  
Lourens, Matthys Johannes

**Nagraadse Diploma in Beroepsgeneeskunde Cum Laude**  
**Postgraduate Diploma in Occupational Medicine Cum Laude**

Harker, Hayley Carmen

**Honneurs-Baccalaureus in die Natuurwetenskappe**  
**Bachelor of Science Honours**

Coetzee, Sandra (Menslike Anatomie)  
Nolan, Heidi (Mensgenetika (Klinies))

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Abdeldayem, Ahmed (Hiperbariese Geneeskunde)  
Eldakhkhny, Medhat Mohamed (Hiperbariese Geneeskunde)

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Denton, Shaheen  
Dhladla, Nozipho Lorraine  
Longo, Nyameka  
Mguli, Bulelwa Vivian

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Baron, Justine Carla

**Magister in die Natuurwetenskappe**  
**Master of Science**

Agenbag, Chris-Maré (Farmakologie)  
Bosch, Come (Geneeskundige Mikrobiologie)  
Dube, Kopano Rebaona (Geneeskundige Fisiologie)  
Herholdt, Helene Margaretha (Mensgenetika)  
Hickman, Rhodine (Kliniese Epidemiologie)  
Higgitt, Roxanne (Molekulêre Biologie)  
Kanyinda Kitenge, Marcel (Kliniese Epidemiologie)  
Kroukamp, Marlouw (Geneeskundige Fisiologie)  
Maluleke, Kuhlula (Kliniese Epidemiologie)  
Matshazi, Don Makwakiwe (Geneeskundige Virologie)  
Mdlongwa, Innocent (Kliniese Epidemiologie)  
Naidoo, Selvan Manickum (Kliniese Epidemiologie)  
Nkambule, Jerome Zanani (Kerngeneeskunde)  
Ojo, Anthony Kolawole (Kliniese Epidemiologie)  
Paterson, Lauren Ann (Geneeskundige Mikrobiologie)  
Patten, Victoria Alexandra (Geneeskundige Fisiologie)  
Saayman, Jamie Ester (Geneeskundige Virologie)  
Selepe, Malesiba Mampotoko (Sitopatologie)

**Magister in die Natuurwetenskappe Cum Laude**  
**Master of Science Cum Laude**

Chingombe, Byrone (Kliniese Epidemiologie)  
Cole, Victoria Ingle (Mensgenetika)  
Fitzermann, Yessica Katharina (Molekulêre Biologie)  
Goss, Dale Mark (Geneeskundige Fisiologie)  
Maqeda, Zimvo (Geneeskundige Fisiologie)  
Rawstome, Jordyn Carla (Geneeskundige Fisiologie)  
Van Deventer, Heidi (Kliniese Epidemiologie)

**Magister in die Geneeskunde**  
**Master of Medicine**

Baitchu, Yadhira (Chirurgie)  
Barnard, Benjamin Wybrand (Radiologiese Diagnose)  
Burger, Celeste (Kerngeneeskunde)  
Carkeek, Katherine Janita (Pediatrie)  
De Witt, Caro (Psigiatrye)  
Du Plooy, Elri (Pediatrie)  
Elghawail, Yousef Mohamed Ahmed (Ortopedie)  
Kariem, Roshan (Kliniese Patologie)  
Maharaj, Yadhira (Hematologiese Patologie)  
Mahroug, Esam (Hematologiese Patologie)  
Muller, Hilgard (Ortopedie) (*postuum*)  
Ndlovu, Xolani (Kerngeneeskunde)  
Odumtse-Soriletsile, Tshupo Lady (Huisartskunde)  
Pretorius, Elias Johannes (Radiologiese Diagnose)  
Pupwe, George (Radiologiese Terapie)  
Stevenson, Nico (Chirurgie)  
Wentzel, Bradley Carl (Pediatrie)

**Magister in die Natuurwetenskappe in Geneeskundige Wetenskappe**  
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Ngemntu, Sharon Nokuzola (Rehabilitasie)

**Magister in Menslike Rehabilitasie Studies**  
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Patterson, Stacey Louise (Rehabilitasie)  
Paulus-Mokgachane, Thato Michael Moutie (Rehabilitasie)  
Pienaar, Elzabeth (Rehabilitasie)

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Mutabani, Pauline Limakazo  
Rahim, Muhammad Faisal  
Sukrajh, Verona

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Govender, Melvin Megandran (Gesondheidsberoepe-Onderwys)  
Haroun, Fadilah (Gesondheidsberoepe-Onderwys)  
Hobbs, Elizabeth (Gesondheidsstelsel- en -Dienstenavorsing)  
Kenga, Dikolela (Huisartskunde)  
Mafara, Emma (Gesondheidsstelsel- en -Dienstenavorsing)  
Molelekwa, Vincent Gothaloganyamang (Reproduktiewe Geneeskunde)  
Molwantwa, Mmoloki Cornelius (Gesondheidsberoepe-Onderwys)  
Ndakit, Manighuli Kambasu Fabien (Huisartskunde)  
Nsangamay, Tshimanga (Huisartskunde)  
Sepako, Enoch (Gesondheidsberoepe-Onderwys)  
Simon, Donald (Pulmonologie)  
Steyn, Judy (Gesondheidsberoepe-Onderwys)  
Thomas, Heidi (Gesondheidsberoepe-Onderwys)  
Van Niekerk, Liezel Patricia (Gesondheidsberoepe-Onderwys)  
Visser, Monique (Gesondheidsberoepe-Onderwys)

**Magister in Arbeidsterapie Cum Laude**  
**Master of Occupational Therapy Cum Laude**

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Blanckenberg, Martha Magdalena  
Erastus, Aina Ndilimeke  
Govender, Nelanie  
Koopman, Gerda Linette  
Liebenberg, Maruanda  
Lusaka, Mildred  
Mbidi, Tekla Shipahu Natangwe  
Mhango, Ethel Chimango  
Mlambo, Sarah  
Mohoaduba, Princess Lindiwe  
Motlhoki, Lillian Dikeledi  
Ndikwetepo, Monika Namupa  
Pretorius, Cleopatra  
Rossouw, Freda Marina  
Rust, Hanri  
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Flint, Cristen Sarah (Voedingswetenskappe)  
Hess, Alicia Renata (Voedingswetenskappe)  
Lodewyks, Thea (Voedingswetenskappe)  
Majaha, James (Voedingswetenskappe)  
Munyi, Faith Wanja (Voedingswetenskappe)  
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**Magister in Fisioterapie**  
**Master of Physiotherapy**

Almidhani, Omar  
Brouwer, Lindie Estelle  
Heynes, Andre  
Heyns, Joleen  
Kriel, Réna Isabel  
Moodien, Wendy Lynn  
Rhode, Carlyn  
Terhart, Maxine Nati  
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De Grass-Clementson, Jamie