



### Beste Matie-graduandus

Hartlik geluk met die kwalifikasie wat jy vandag verwerf. Ons is trots op jou!

Jy is deel van 'n uitgelese groep, want vandeeweek vind die eerste stel gradeplegtighede van ons tweede eeu as universiteit plaas. Dit was ons Eeufeesjaar in 2018, en ons het ook 'n nuwe visie en strategiese raamwerk aanvaar waarmee ons nou die toekoms vol vertroue tegemoet gaan.

Die Universiteit Stellenbosch (US) streef daarna om Afrika se voorste navorsingsintensiewe universiteit te wees wat wêreldwyd as uitnemend, inklusief en innoverend erken word. Ons is ook daartoe verbind om kennis tot diens van die samelewing te bevorder. Dit is veral met laasgenoemde doelwit waarmee jy ons kan help namate jy nou die beroepslewe betree.

Jou tyd by Maties het jou voorberei om leiding te neem en uit te blink in 'n diverse wêreld, danksy 'n omgewing waarbinne jy 'n transformerende studente-ervaring kon hê. Mag jy wat jy hier geleer het, met vrug toepas en mag die US se waardes – uitnemendheid, deernis, billikheid, respek en verantwoordbaarheid – jou rigsgoer bly.

Die US sal altyd jou akademiese tuiste wees. Besoek gerus ons opwindende nuwe alumni-platform, [www.matiesconnect.com](http://www.matiesconnect.com). Daar kan jy kontak met jou universiteitsvriende behou, werksaanbiedinge sien, asook mentors en netwerkgeleenthede vind – alles op een plek. Studies dui daarop dat betrokkenheid by sterk alumni-netwerke vrugte afwerp. Bly deel van die Matie-familie om jou loopbaan te bevorder.

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 today. We are proud of you!

You are part of a very special group, as this week's graduation ceremonies are the first to be held in our second century as a university. We commemorated our Centenary in 2018 and in the same year, we adopted our new strategic framework, enabling us to enter the future with confidence.

Stellenbosch University (SU) aims to be Africa's leading research-intensive university, globally recognised as excellent, inclusive and innovative. We are also committed to advance knowledge in service of society. As you set out on your career path, we call on you to assist us with this latter part of our vision.

Your time at Maties has prepared you to lead and excel in a diverse world thanks to an environment in which you could enjoy a transformative student experience. May you succeed in applying what you have learnt here successfully and may the values of SU – excellence, compassion, equity, respect and accountability – continue to guide you.

SU will always be your academic home. Visit our exiting new alumni platform, [www.matiesconnect.com](http://www.matiesconnect.com), to stay in touch with your university friends, and find the latest job postings, mentors and networking opportunities – all in one place. Studies have shown that involvement in strong alumni networks pays dividends, so remain part of the Matie family to advance your career.

Our best wishes accompany you!

Prof Wim de Villiers  
Rector and Vice-Chancellor

### Ophumelele Ematie Othandekayo

Sithi huntshu kuwe khwalifikeshini oza kuyifumana namhlanje. Siyazidla ngawe!

Uyinxalenye yeqela elikhethekileyo, njengoko imisitho yabaphumeleleyo yale veki iyeyokuqala ukubanjwa kwinkulungwane yethu yesibini njengeyunivesithi. Siye sabhiyozela iMinyaka Elikhulu sikho ngo-2018 yaye kwangaloo nyaka, siye samkela isicwangciso-qhinga esitsha, nto leyo esincede ukuba singene kwikamva ngokuzithemba.

IYunivesithi yaseStellenbosch (SU) izimisele ukuba yiyunivesithi etshotsh' entla kwezophando olunzulu eAfrika, igqalwa ehlabathini lonke njengephum' izandla, iquka wonke umntu yaye inobuchule. Kanti sizimisele ukuqhubela phambili ulwazi ekunikeni uluntu iinkonzo. Njengoko uza kuqalisa umsebenzi wakho, siyakubongoza ukuba usincedise kulo mbono esigqiba kuwuchaza.

Ixesha obuseMaties ngalo liye lakulungiselela ukukhokela uze uphale phambili kwihlabathi elinabantu abahlukeneyo ngenxa yemo okwazileyo ukunambitha kuyo imo yokuba ngumfundi okwaziyo ukutshintsha izinto. Ngamana ungaphumelela ekusebenziseni izinto oye wazifunda apha yaye ngamana iziseko zaseSU – ukugqwesa, uvelwano, ukulingana, intlonelo nokunikela ingxelo – ungaqhubeka ukhokelwa zizo.

I-SU iya kuqhubeka ilikhaya lakho lemfundo. Tyelela eli qonga lethu elitsha nelibangela umdla lwabo babesakufunda apha, [www.matiesconnect.com](http://www.matiesconnect.com), ukuze uhlale unxulumana nabahlobo bakho baseyunivesithi, yaye fumana izithuba zemisebenzi ezixhonywa mvanje, abacebisi kwakunye namathuba okudibana nabanye abantu – zonke ezo zinto zikwindawo enye. Uphononongo luye lwabonisa ukuba ukudibana nabanye ababesakufunda apha kuba neziphumo ezihle, ngoko hlala uyinxalenye yentsapho yaseMatie ukuze ukhulise amathuba akho omsebenzi.

Sikunqwenelela eyona minqweno mihle!

Njing Wim de Villiers  
INqununu noSekela-Tshansila

## **Ons Visie 2040**

Die Universiteit Stellenbosch sal Afrika se voorste navorsingsintensiewe universiteit wees wat wêreldwyd as uitnemend, inklusief en innoverend erken word en waar ons kennis tot diens van die samelewing bevorder.

## **Ons Missie**

Die Universiteit Stellenbosch is 'n navorsingsintensiewe universiteit wat uitmuntende studente lok, talentvolle personeel aanstel en 'n wêreldklasomgewing bied; 'n plek wat met die wêreld verbind is en gemeenskappe plaaslik, op die vasteland en in die res van die wêreld verryk en transformeer.

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## **Our Vision 2040**

Stellenbosch University will be Africa's leading research-intensive university, globally recognised as excellent, inclusive and innovative, where we advance knowledge in service of society.

## **Our Mission**

Stellenbosch University is a research-intensive university where we attract outstanding students, employ talented staff and provide a world-class environment; a place connected to the world, while enriching and transforming local, continental and global communities.

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## **Umbonoweth ka2040**

IYunivesithi yaseStellenbosch iya kuba yiyunivesithi egxininise kuphando nekhokeleyo eAfrika, neyamkelwa kwihlabathi lonke njenge-gqwesileyo, equkayo neyenza inguqulelo, nalapho siqhubela phambili ulwazi sikhonza uluntu.

## **Ubizo Lwethu**

IYunivesithi yaseStellenbosch yiyunivesithi egxininise kuphando nalapho sitsala abafundi abagqwesileyo, siqesha abasebenzi abanesiphiwo kwaye sibonelela nemeko ekwinqanaba lehlabathi; indawo eqhagamshelene nehlabathi, ngelixa ichumisa kwaye iguqula uluntu lwengingqi, lwelizwekazi nolwehlabathi.

## **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 Klopper, 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 I Woolard, BSc, BAHons, PhD

### **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 DJ Malan, MA, DPhil (Waarnemend | Acting)

### **Regsgeleerdheid | Law**

Prof N Smit, BLC, LLB, LLD

### **Teologie | Theology**

Prof RW Nel, BA, BTh, MTh, DTh

## Interessanthe de 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 hooftooisel. 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.matiesconnect.com](http://www.matiesconnect.com), dophou vir interessante nuus en konvokasievergaderings.**

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## 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.matiesconnect.com](http://www.matiesconnect.com), for interesting news and information about convocation meetings.**

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## 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 kwiiyunivesithi 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 njengenxenywe 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 beefakhalthi 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.matiesconnect.com](http://www.matiesconnect.com), ukufumana iindaba ezinika umdla kunye nenkcukacha emalunga neentlanganiso zekhonvokheyishini.**

# Diploma- en Gradeplegtighede | Diploma and Graduation Ceremonies

## 1. 2 April 2019 (17:00)

### Eregraad | Honorary Degree

Johannes Hermanus Hugo Coetzee .....	10
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### Fakulteit AgriWetenskappe | Faculty of AgriSciences

Doktorsgrade   Doctorates .....	11
Ander kwalifikasies   Other qualifications .....	20

### Fakulteit Geneeskunde en Gesondheidswetenskappe

#### Faculty of Medicine and Health Sciences

Doktorsgrade   Doctorates .....	16
Ander kwalifikasies   Other qualifications .....	22

## 2. 3 April 2019 (10:00)

### Eregraad | Honorary Degree

John Latham .....	30
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### Fakulteit Ekonomiese en Bestuurswetenskappe Faculty of Economic and Management Sciences

Doktorsgrade   Doctorates .....	31
Ander kwalifikasies   Other qualifications .....	33

Dip (Openbare Verantwoordbaarheid), NGDip (Besigheidsbest en Admin), NGDip (Dispuutbesl), NGDip (Fin Beplanning), NGDip (Leierskapontw), NGDip (Omgewingsbes), NGDip (Ontwikkelingsfinansies), NGDip (Projekbest), NGDip (Toekomsstud), NGDip (VolhOntw), HonsBCom, maar slegs Openbare en Ontwikkelingsbest, HonsBPA, MPhil (Bestuursaf, Omgewingsbes, Ontwikkelingsfinansies, Toekomsstud, VolhOntw), MPA, MBA, PhD (Bestuurskool)

Dip (Public Accountability), PGDip (Business Managmnt and Admin), PGDip (DispSettlement), PGDip (FinPlan), PGDip (Leadership Dev), PGDip (EnvironMan), PGDip (Dev Finance), PGDip (ProjMan), PGDip (Futures St), PGDip (Sustainable Dev), BComHons, but only Public and Development Management, BPAHons, MPhil (Managmnt Coaching, EnvironMan, Dev Finance, Futures St, Sustainable Dev), MPA, MBA, PhD (Business School)

## 3. 3 April 2019 (17:00)

### Eregraad | Honorary Degree

Shirley Ann Jackson .....	42
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### Fakulteit Teologie | Faculty of Theology

Doktorsgrade   Doctorates .....	43
Ander kwalifikasies   Other qualifications .....	49

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

Ander kwalifikasies   Other qualifications .....	50
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**Slegs** BRekLLB, BRek, HonsBRek en MRek

**Only** BAccLLB, BAcc, BAccHons and MAcc

### Fakulteit Ingenieurswese | Faculty of Engineering

Doktorsgrade   Doctorates .....	45
Ander kwalifikasies   Other qualifications .....	53





**1**

**2 April**

**17:00**

**Fakulteite**

*AgriWetenskappe*

*Geneeskunde en Gesondheidswetenskappe*

**Faculties**

*AgriSciences*

*Medicine and Health Sciences*





# 1

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## PROGRAM

- Staan asseblief*
- Staan asseblief*
- Sit asseblief*
1. Akademiese prosesie kom die saal binne.
  2. Sing van die Nasionale Lied (sien binnekant van die agterblad).
  3. Konstituering deur die Visekanselier.
  4. Verwelkoming deur die Visekanselier.
  5. Verwelkoming in Xhosa.
  6. Voorstelling van die eredoktorandus en toekenning van die eregraad deur die Visekanselier.
  7. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Visekanselier.
  8. Sluiting deur die Visekanselier.
- Staan asseblief*
9. Akademiese prosesie verlaat die verhoog.

## PROGRAMME

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

## EREGRAAD | HONORARY DEGREE

*Fakulteit Agriwetenskappe*  
*Faculty of AgriSciences*

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

### JOHANNES HERMANUS HUGO COETZEE

**vir sy uitlewing van uitnemendheid in tegnologiese en bestuursontwikkeling in die Suid-Afrikaanse wynbedryf, en in die produksie van puik Suid-Afrikaanse wyne; én vir sy ruimhartigheid van gees deur sy onbaatsugtige toewyding aan kennisoordrag en deur sy betrokke burgerskap om die werks- en leefomstandighede van plaaswerkers te verbeter.**

Johannes Hermanus Hugo Coetzee – beter bekend as Jan Boland Coetzee – verwerf in 1968 die graad BScAgric met Wingerd- en Wynkunde en Chemie as hoofvakke aan die Universiteit Stellenbosch (US). Hy het 'n leeftyd daaraan gewy om voorspraak te doen vir Suid- Afrikaanse wyne, om die unieke karakter van die streek en die Afrika kontinent te weerspieël, en om wyne te produseer wat internasionaal erkenning geniet. As een van die stigterslede van die Kaapse Wynmakersgilde het hy sy wynmaakkennis onbaatsugtig deur die Gilde se protégé-programme vir wingerd- en wynkunde gedeel.

Coetzee het die Landelike Stigting in die 1970's help skep. Saam met ander wynboere het hy hierdie platform gebruik om die werks- en leefomstandighede van werkers op plaaslike wynplase te verbeter. Toe die Stigting sy deure sluit, het Coetzee sy maatskaplike inisiatiewe vir plaaswerkers op Vriesenhof voortgesit.

Op sportgebied het hy Matie- en Stellenbosse rugby langer as 50 jaar in verskeie posisies gedien. Hierdie voormalige Springbokrugbyspeler is ook 'n gewaardeerde alumnus en vriend van die US.

Hy was een van die aanvoorders van die Instituut vir Wingerd- en Wynwetenskappe – 'n gesamentlike onderneming van die wynbedryf en die US. Sy spesiale vriendskap met die US en die Fakulteit AgriWetenskappe duur steeds voort.

Jan Boland Coetzee is die toonbeeld van die werksetiese, ondersoekende gees en betrokke burgerskap waarmee die US sy graduandi wil toerus. Sy strewe na uitnemendheid op sy vakgebied én sy ruimhartigheid is die Universiteit se hoogste eerbewys waardig.

**for his pursuit of excellence in development of technology and management in the South African wine industry, and in the crafting of fine South African wines; and for his generosity of spirit through his selfless dedication to knowledge transfer and engaged citizenship to improve the working and living conditions of farm workers.**

Johannes Hermanus Hugo Coetzee – better known as Jan Boland Coetzee – graduated from Stellenbosch University (SU) in 1968 with a BScAgric degree, majoring in Viticulture/Oenology and Chemistry. Over the past 50 years he has been crafting some of the finest wines South Africa has to offer. He has spent a lifetime advocating for South African wines, reflecting the uniqueness of the region and the African continent and securing international acknowledgement for excellence in winemaking. As one of the founder members of the Cape Winemakers Guild, he selflessly shared his winemaking expertise through the Guild's protégé programmes for viticulture and oenology.

Coetzee helped set up the Rural Foundation in the 1970s. Along with other wine farmers, he used this platform to improve the working and living conditions of workers on local wine farms. When the Foundation closed down, Coetzee continued pursuing social initiatives for farm workers on his farm Vriesenhof.

In the sporting arena, he served Maties and Stellenbosch rugby for over 50 years in various capacities. This former Springbok rugby player is also a cherished alumnus and friend of SU.

He was one of the initiators of the Institute for Grape and Wine Sciences – a joint venture between the wine industry and SU. His special bond with SU and its Faculty of AgriSciences continues.

Jan Boland Coetzee embodies the work ethic, enquiring mind and engaged citizenship that SU wishes to instil in its graduates. His pursuit of excellence in his field as well as his generosity of spirit is worthy of the University's highest honour.

## **Doktor in die Wysbegeerte**

### **Doctor of Philosophy**

**ADAMS, Adrian Richard** (Soil Science)

#### *LIPID humification by soil clays*

The capacity of common soil minerals to humify lipids was investigated in terms of the reaction products formed, the mechanistic pathways involved and the rates at which these reactions occur. Manganese oxides were shown to be the most reactive minerals and the reaction follows a complex, multistage pathway involving numerous intermediates. This is the first study to show the abiotic humification of lipids at environmental temperatures and demonstrates that this previously overlooked process could be an important contributor to carbon sequestration in soils.

*Supervisor:* Dr CE Clarke

*Co-supervisor:* Dr AG Hardie

**ALAWODE, Abiodun Oluseun** (Wood Product Science)

#### *Properties and potential use of Irvingia gabonensis and Irvingia wombolu kernel extracts as an eco-friendly wood adhesive*

Formaldehyde-based adhesives are major raw materials in the production of wood composite products due to their superior performance properties. However, there is a growing need for alternative wood adhesives due to the harmful effects of formaldehyde on human health. This study established the feasibility of utilising extracts from Irvingia wood seed kernel waste as natural wood adhesives. The results indicated that Irvingia-based wood adhesives have comparable performance properties with formaldehyde-based wood adhesives. Therefore, they are recommended as potential alternatives to the non-renewable raw material-based and formaldehyde-emitting adhesives that are currently being used in the wood industry.

*Supervisor:* Dr L Tyhoda

*Co-supervisor:* Prof M Meincken

**BEKKER, Gerard Francois Hermanus Van Ginkel** (Entomology)

#### *Spatio-temporal analyses of fruit fly populations in selected areas of the Western Cape*

The aim of this study was to investigate main geographic drivers of the spatio-temporal distribution of Mediterranean fruit fly (Medfly) populations in heterogeneous fruit-producing environments in the Western Cape province using geospatial analyses and machine learning (ML) techniques. The results indicated that long-term area-specific geographic variables can explain the spatio-temporal distributions of the Medfly on a regional scale. This information will assist the deciduous fruit industry in improving its management of Medfly populations by more precise application of fruit fly management actions. The application of ML holds promise for the advancement of the agricultural sector, especially in the field of crop protection.

*Supervisor:* Dr P Addison

*Co-supervisor:* Prof A van Niekerk

**BRAND, Jeanne** (Wine Biotechnology)

#### *Rapid sensory profiling methods for wine: Workflow optimisation for research and industry applications*

Rapid sensory methods for wine sensory profiling were evaluated and optimised in this study. Four methods, namely check-all-that-apply, rate-all-that-apply, napping and sorting, were compared to descriptive analysis and their suitability as wine profiling tools evaluated. A pivot profile was validated, and the stability of the method tested, analysing data sets with varying complexity. A procedure to construct confidence ellipses for pivot profile data was proposed. A workflow, combining sorting and quality scoring, was developed to determine drivers of quality using wine industry professionals as sensory judges. The methods provided new insights into Chenin Blanc wine styles. Strengths and limitation of the rapid methods were highlighted.

*Supervisor:* Dr HH Nieuwoudt

*Co-supervisors:* Profs T Naes, D Valentin, MA Vivier

**BWALA, Richard Lema** (Aquaculture)

#### *Development of a cost-effective system of ovoviparous low-salinity production of Artemia nauplii as live food for the larvae of the African catfish (Clarias gariepinus: Burchell, 1822)*

Alternative ways to supply brine shrimp (*Artemia franciscana*) as live food in fish culture in sub-Saharan Africa were considered in this study. The results indicated that low salinity and locally sourced agricultural materials could be used for maintaining ovoviparously reproducing populations of the Great Salt Lake strain (*Artemia franciscana*). African catfish (*Clarias gariepinus*) larvae fed the ovoviparously produced nauplii showed that it is a suitable alternative to conventional oviparous nauplii and decapsulated cysts of *Artemia*. Benefits of this rearing system are potentially in using ovoviparous nauplii for improved post-larval growth, post-larval quality of the fish, constant quality of live food and self-reliance for hatchery owners.

*Supervisor:* Dr K Salie

*Co-supervisor:* Prof G van Stappen

**CHENEY, Chad Crispian** (Conservation Ecology)

#### *An evidence base of improving management effectiveness of alien plants in protected areas: Relationships of scale, efficiency and strategy*

Alien plants pose ongoing challenges in many protected areas, perpetuating long-term management costs, which inevitably require prioritisation. This study investigated the three areas of the management decision-making environment that impact on realisation of alien control outcomes, with a particular focus on Australian acacia. The study found that inaccurate data, poor work quality and incorrect strategy implementation were the primary limitations to the current management of alien plants. A recommendation on how to improve conservation outcomes and the management approach to clearing alien vegetation, without increasing operational budgets, is provided.

*Supervisor:* Prof KJ Esler

*Co-supervisors:* Dr L Foxcroft, Prof M McGeogh (external)

**CHIKWANHA, Obert Chenjerayi (Animal Science)**

*Feed supplement and meat preservative potential of red grape pomace in lamb production*

The lamb industry in South Africa is challenged by pre- and post-harvest losses mainly caused by inadequate nutrition and oxidative deterioration of meat. This study evaluated the potential of grape pomace, a by-product of wine processing, as a feed supplement in intensive lamb finishing systems and a natural preservative of fresh lamb meat. Inclusion of 12 and 15% grape pomace in lamb diets increased lamb production and meat shelf life, respectively, without compromising eating quality. It is recommended that the South African lamb industry use grape pomace as feed supplement and meat preservative, as this will subsequently improve food and nutrition security and decrease environmental pollution.

*Supervisor: Dr C Mapiye*

*Co-supervisor: Prof V Muchenje (external)*

**COOK, Glynnis (Genetics)**

*Characterisation of citrus tristeza virus variants and their influence on symptom expression in grapefruit*

In South Africa grapefruit is affected by stem-pitting caused by the citrus tristeza virus (CTV). This study reports on the molecular and biological characterisation of eight CTV strains and their use in a complementation study to investigate stem-pitting in commercial grapefruit. The co-existence of both severe and mild variants of the same strain within a single plant provided an explanation for the failure of a CTV cross-protection source previously applied to grapefruit. The characterisation of these variants will assist in the identification of the sequence determinants for stem-pitting in grapefruit and better inform the use of cross-protection as a management strategy.

*Supervisor: Prof AJ Maree*

*Co-supervisor: Prof JT Burger*

**CRAFFORD, Philippus Lodewicus (Wood Product Science)**

*An investigation into the environmental sustainability of buildings in South Africa with a focus on timber building systems*

This study showed that wood-based constructions generally have lower environmental impacts compared to the alternatives, such as cement, brick and steel-based structures. Green building rating tools, however, do not sufficiently reflect these well-documented environmental benefits of using wood. An increase in timber building in the South African residential market will lead to a decrease in local primary energy use and global warming potential. It was shown that with the use of wood resources currently exported as chips in South Africa as well as planting trees in areas that have been earmarked for afforestation, it will be possible to sustain a future residential building market where all constructions are wood-based.

*Supervisor: Dr CB Wessels*

*Co-supervisor: Dr M Blumentritt (external)*

**DE GROOT, Gerida (Food Science)**

*Genotyping South African wheat cultivars for hardness alleles*

Wheat kernel hardness, an important quality property of wheat grain, is determined by the presence of puroindoline a and b alleles. These were identified in South African cultivars using polymerase chain reaction and allele sequencing, and correlated with grain, milling and flour characteristics. Diversity in puroindoline genotypes was only observed for wheat produced in the summer rainfall regions. The protein molecular weight distribution within puroindoline genotype classes were investigated with size-exclusion high-performance liquid chromatography. The obtained results will enable South African wheat breeders to select specific puroindoline allele combinations to more rapidly breed wheat for specific end-use properties.

*Supervisor: Prof M Manley*

*Co-supervisor: Dr G Fox (external)*

**ESPINAZE PARDO, Marcela Paz Alejandra (Conservation Ecology)**

*Parasites of African penguins: Diversity, ecology and effect on hosts*

This regional- and local-scale study on the endangered African penguin along the southwest coast of South Africa identified nest density (driven by food resources) and nest type (driven by micro-climatic conditions in the nest) as important determinants of ecto-, endo- and haemoparasite infestation in penguins, respectively. Penguin age was important across colonies, with chicks more heavily parasitised compared to adults. The local study also identified a seasonal effect with higher ectoparasite infestations in spring-summer (warm and dry environmental conditions) compared to autumn-winter. Preliminary data identified a possible negative relationship between parasite infestations and clinical health parameters of penguins.

*Supervisor: Prof S Matthee*

*Co-supervisors: Prof C Hui, Dr L Waller (external)*

**GREYLING, Jan Christoffel (Agricultural Economics)**

*Policy, production and productivity: Spatial dynamics in the South African maize industry during the 20th century*

This study investigated the production and productivity consequences of change in agricultural policies for maize production in South Africa during the 20th century, emphasising the spatial implications. A close correlation was found between changes in policy regimes and expansion and contraction in the area of production. Favourable policies expanded production into more marginal, lower-yielding areas. This induced investments in improving plant material, farming practices and infrastructure, which had longer-run consequences once the farm-favourable policies were withdrawn. The policies had detrimental spatial productivity implications that persisted after they were removed, which is relevant to other African countries currently pursuing similar policies.

*Supervisor: Prof N Vink*

*Co-supervisors: Profs J Bolt, P Pardey (external)*

**HUMAN, Chantelle (Food Science)*****The physicochemical properties and stability of aspalathin in micro- and nanoencapsulated green rooibos extract formulations***

Microencapsulation and nanoencapsulation of aspalathin-rich green rooibos extracts were investigated to produce powders suitable as beverage ingredients or nutraceuticals. Maltodextrin and inulin, but not chitosan, were suitable carriers for microencapsulation. Common food ingredients (crystalline sweeteners and acids) decreased the powder stability of iced tea powder formulations containing inulin-microencapsulated extract. Nanoencapsulation using chitosan, lecithin, poly (lactide-co-glycolide) and Eudragit S100 (ESI00) was successful, with ESI00-electrosprayed particles having the best combination of properties. Processing parameters were optimised using a central composite design. Nanoencapsulation of extract and pure aspalathin increased aspalathin stability under gastrointestinal conditions, while no changes in membrane permeability could be detected.

*Supervisor:* Prof D de Beer

*Co-supervisor:* Prof E Joubert

**KRITZINGER, Imke (Horticultural Science)*****Postharvest moisture loss in Japanese plums***

The role of the cuticle in determining postharvest moisture loss and shrivel susceptibility was investigated in this study. Neither peel permeability nor the presence of open lenticels explained shrivel susceptibility. Although low shrivel manifestation seemed related to increased concentrations of primary alcohols in the cuticular waxes, wax composition did not fully explain shrivelling. Low phenol and high tri-hydroxy acid concentrations in shrivel-susceptible cultivars probably made their cuticles more flexible. Flexible cuticles are more likely to collapse when the hypodermal cells underneath them shrink due to moisture loss. Cultivars with large intercellular spaces shrink more, causing a higher incidence of shrivel manifestation.

*Supervisor:* Dr E Lötze

*Co-supervisor:* Prof KI Theron

**LUVUNO, Linda Bandile (Conservation Ecology)*****Understanding social-ecological regime shifts: The case of woody encroachment***

Humanity has been very successful in modifying the planet, which has led to increased occurrences of regime shifts: large, persistence changes in the structure and function of social-ecological systems. This study aimed to better understand regime shifts, their impacts and how they might be monitored and managed by investigating the example of woody encroachment. The results provided a broader social-ecological perspective of viewing woody encroachment, which encourages land managers to focus on feedbacks in their systems and how local and global drivers interact to cause woody encroachment. It also provided tools to assess and monitor woody encroachment.

*Supervisor:* Prof KJ Esler

*Co-supervisors:* Prof R Biggs, Dr N Stevens (external)

**MCKAY, Marianne Alison (Oenology)*****Characterising sensory interactions between volatile phenols and other taint-causing compounds in South African red wines***

This study focused on the sensorial characterisation of olfactory perceptual interactions caused by adding sub- or threshold levels of problematic aroma compounds to red wine. Volatile phenols (linked to smoky, burnt, ashy flavours) combined with other well-known 'taint' contributors had unexpected effects on the aroma of the wine, leading to the perception of off-odours that were dissimilar from those of the individual compounds. This sensory information could help explain off-odours that cannot be explained by the chemistry of a wine. It could help inform winemaking decisions with smoke-affected grapes and escalate awareness of these issues in the wine industry.

*Supervisor:* Dr A Buica

*Co-supervisor:* Prof F Bauer

**MPETILE, Ziyanda (Animal Science)*****The genetics of ovine resistance to gastrointestinal nematodes***

Infestation with gastro-intestinal nematodes (GIN) presents the local sheep industry with major challenges. Breeding for resistance to GIN was studied within and across sheep breeds and age groups as a component of an integrated pest management strategy. Faecal worm egg count as proxy for resistance was variable and heritable in young animals and unrelated to important wool and live weight traits. Season markedly affected the magnitude of heritability estimates, being lower in autumn and higher in spring. The study proposes interventions to maximise heritability estimates and presents a strategy for including parasite resistance in the National Evaluation Scheme for sheep.

*Supervisor:* Prof SWP Cloete

*Co-supervisor:* Prof K Dzama

**MUNALULA, Francis (Wood Product Science)*****The growth response of selected Zambian hardwood species to changing climatic conditions***

This study assessed the response of three hardwood species from the Zambian Miombo woodlands to the occurrence of extreme climatic events, such as droughts. The results showed that all studied trees have enough resilience to withstand the effects of reduced rainfall and increased temperature. However, a significant variation in anatomical properties was found in wood from drier sites and in wood formed during very dry years. This will have a noticeable effect on the quality of wood. A model was developed to predict changes in anatomical properties with the expected climate change for the next 50 years.

*Supervisor:* Prof M Meincken

*Co-supervisor:* Prof T Seifert

**NORTH, Megan Kim (Animal Science)**

*The potential of quercetin to improve performance and meat quality in rabbits*

Flavonoids are naturally-occurring compounds of interest to the livestock industry due to their antioxidant, antimicrobial and other pharmacological activities. The effects of dietary quercetin on the performance of New Zealand white rabbits was investigated in this study. Live performance, basic meat quality and meat shelf life were largely unaffected; however, supplementation altered the abundance of Firmicutes, Anaerofustis, Roseburia, Oscillibacter and Ruminococcus albus in the caecal microbiome and increased the meat yield of the hind leg. Most notably, supplementation also decreased the PUFA n-6:n-3 ratio of the loin meat, thereby improving its nutritional quality. Quercetin may therefore have potential as a dietary livestock supplement.

**Supervisor:** Prof LC Hoffman

**Co-supervisor:** Prof A Dalle Zotta (external)

**SHIPANDENI, Maria Ndakula Tautiko (Animal Science)**

*Modulation of starch digestion for productive performance in dairy cows*

Cows that undergo a successful transition from non-lactating to lactating may experience higher milk production and a reduction in post-calving disorders. A series of experiments were conducted to investigate the effects of modulating starch digestion between the rumen and post-rumen by varying ruminal fermentability of various starch sources. While more processing alternatives should be investigated to reduce loss of digestibility postruminally, partially shifting some of the starch digestion postruminally in early postpartum cows increased intake and milk production and decreased mobilisation of body reserves, decreasing the risk of health issues. The aim was achieved by feeding a larger particle grain size in a commercial farm.

**Supervisor:** Dr E Raffrenato

**Co-supervisors:** Prof CW Cruywagen, Dr G Esposito

**STEYN, Leigh Ami Isbell (Entomology)**

*The development of a management strategy for the control of the Cape grapevine leafminer, *Holocacista capensis* (Lepidoptera: Heliozelidae) in South African's table grape vineyards*

This study investigated a variety of physical, chemical and biological control strategies to lay the groundwork for the development of a management strategy to effectively manage the Cape grapevine leaf miner, a native lepidopteran pest recently reported on table grapes, in commercial vineyards. While considering the influence of environmental and abiotic variables on leaf miner abundance, the findings provided strong evidence that the integrated use of conventional (physical and chemical) and biological control strategies as well as the appropriate management of soil fertility and crop cover may effectively reduce the leaf miner's population densities in the future.

**Supervisor:** Dr P Addison

**Co-supervisor:** Prof AP Malan

**STEYN, Vernon Murray (Entomology)**

*Integrated management of false codling moth, *Thaumatotibia leucotreta*, on stone fruit and table grapes*

The aim of this study was to investigate the use of entomopathogenic nematodes, entomopathogenic fungi and mating disruption as alternate control methods against false codling moth in stone fruit and table grapes. From this study, valuable knowledge of the susceptibility of the eggs, larvae and pupae of false codling moth to entomopathogens has been gained and showed that mating disruption is a valuable control option to disrupt the mate-finding ability of male moths. It is clear from this study that the integration of these techniques may lead to low population growth and the successful suppression of this infamous pest.

**Supervisor:** Dr P Addison

**Co-supervisor:** Prof AP Malan

**TERBLANCHE, Etienne Louis Adriaan (Viticulture)**

*The impact of grape ripeness level on berry and wine composition and potential wine style of *Vitis vinifera* L. cv. Pinotage*

Information regarding wine style linked to harvest dates is surprisingly limited, more so for the South African cultivar Pinotage. This comprehensive study provides an integrated base of environmental, physiological, growth and grape composition changes affecting Pinotage wine style. Chemical grape and wine composition profiles and sensory descriptors of taste and aroma displayed remarkable sensitivity to progressive grape ripening. Novel insight into sensory changes during rapid berry sugar accumulation was gained. Extended grape ripening showed deleterious effects on wine quality. The findings regarding potential wine styles are extrapolatable and easily utilisable by producers to achieve desired outcomes of harvest decisions.

**Supervisor:** Dr JJ Hunter

**VAN DEN HONERT, Michaela Sannettha (Food Science)**

*Antibiotic resistance prevalence in livestock and wildlife species in South Africa*

This study found that bacteria isolated from the faeces, skin and meat of wildlife in South Africa had the highest antibiotic resistance towards antibiotics that are of natural origin. The wildlife isolates were more multidrug-resistant than the livestock isolates from the same farm. Various factors were found to influence the antibiotic resistance of bacteria from wildlife, namely co-grazing with livestock, the practice of wildlife supplementary feeding and farm history of antibiotic use. The level of antibiotic resistance of the bacteria from wildlife from pristine areas could serve as a baseline for monitoring the influence of human activities on the development of antibiotic resistance.

**Supervisor:** Prof PA Gouws

**Co-supervisor:** Prof LC Hoffman

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**VAN DER COLFF, Nadia (Wine Biotechnology)*****Exploring consumers' risk perception in wine retail decision making: Insights for Chenin Blanc***

This study was an international first investigating wine varietal-specific risk perception. A mixed-methods research approach was followed to explore and describe consumers' Chenin Blanc risk perception in wine retail decision making. Qualitative data were used to develop a measurement instrument that can be adapted to investigate other struggling wine varietals or regions-of-origin. Insights were provided to reduce consumers' Chenin Blanc uncertainty when selecting bottled white wine. Increased exposure to Chenin Blanc and the delivery of consistent sensory experiences, targeted at younger, income-generating, non-traditional wine-drinking consumer segments, are recommended. The findings have implications for South African wine producers and marketers.

**Supervisor:** Dr HH Nieuwoudt

**Co-supervisor:** Dr CD Pentz

**VAN SCHALKWYK, Julia (Conservation Ecology)*****Beta-diversity across different scales in the Cape Floristic Region: How well does a biosphere reserve capture this invertebrate diversity***

This study assessed the success of beta-diversity conservation of the Kogelberg Biosphere Reserve in response to increasing land-use intensity, specifically from fruit orchards. Arthropod diversity is well represented within conservation-orientated core areas, but the more transformed buffer areas have important complementary value, showing that conservation efforts should not only be restricted to core areas. This study also emphasises the importance of management actions within orchards on diversity in adjacent habitats and the associated heterogeneity. While land-use intensity was important in determining diversity at the local scale, non-crop habitats are essential for enhancing farmland diversity across the entire landscape.

**Supervisor:** Dr JS Pryke

**Co-supervisors:** Dr R Gaigher, Prof MJ Samways

**VAN ZYL, Johannes Gideon (Plant Pathology)*****The use of adjuvants to improve fungicide spray deposition and control of Alternaria brown spot in citrus***

The influence of adjuvants on the deposition of fungicides in citrus production was previously unknown. A previously developed deposition assessment protocol was improved and used in this study to develop spray deposition benchmarks indicative of the biological efficacy of copper oxychloride against *Alternaria alternata*. The evaluation of adjuvants in orchards indicated the importance of canopy management and potential benefits of correct adjuvant use at low spray volumes. In laboratory trials anomalous results between disease control and deposition quantity as influenced by adjuvants indicated possible direct or indirect adjuvant effects. This was extensively studied, but could not be explained by *in vivo* and *in vitro* studies.

**Supervisor:** Prof PH Fourie

**WALE, Haile Adamu (Forest Science)*****Pattern and dynamics of remnant dry Afromontane forests: A case study in northwestern Ethiopia***

This study combined common analytical tools to approximate the ecological status of three less-known Afromontane forests in northwestern Ethiopia. Data analyses of plant species and site variables collected on 150 plots provided information on the floristic-structural composition of identified woody and herbaceous plant associations, their plant-plant and plant-site relationships, spatial scales of disturbance affecting regeneration of species differently and the population status of key species. Fragmentation of historical landmass connectivity (vicariance) and more recent dispersal events contributed to floral similarity with other local and more distant forests. This provided basic information to guide sustainable resource use towards conservation of those forests.

**Supervisor:** Prof CJ Geldenhuys

**Co-supervisor:** Prof P Ackerman

**WIESE, Liesl Denise (Soil Science)*****Mapping soil organic carbon stocks by combining NIR spectroscopy and stochastic vertical distribution models: A case study in the Mvoti river catchment, KZN, South Africa***

This study makes a significant contribution to future soil organic carbon accounting through the development of a model to map carbon stocks in the first metre of soil while minimising the need for field and laboratory measurements. Once the model is in place for specific land uses or soil types, only samples at the soil surface are needed to predict carbon stocks down to one metre. For the first time, the measurement error of carbon stock determination is included in the uncertainty assessment of digital soil carbon maps, based on which the accuracy of maps may be determined.

**Supervisor:** Dr A Rozanov

**Co-supervisor:** Dr WP de Clercq

**Doktor in die Wysbegeerte (Voedselwetenskap)  
Doctor of Philosophy (Food Science)****HUSSEIN, Zaharan (Food Science)*****Bruise damage susceptibility of pomegranates and impacts on fruit quality***

Pomegranate fruit is highly susceptible to bruise damage during postharvest handling, causing economic losses. The findings of this study established that bruise susceptibility of pomegranate fruit is dependent on the level of drop impact, cultivar and storage condition and duration. The study further demonstrated the feasibility of X-ray micro-computed tomography for early detection of bruise damage on pomegranate fruit. The study established and recommends the impact threshold for bruising for pomegranate cultivars of commercial interest.

**Supervisor:** Prof. UL Opara

**Co-supervisors:** Dr OA Fawole, Prof GO Sigge

## **Doktor in die Wysbegeerte** **Doctor of Philosophy**

### **ADETOKUNBOH, Olatunji Oluseyi (Epidemiology)**

#### *Understanding the relationship between vaccination, vaccine-preventable diseases and HIV infection among sub-Saharan African children*

This study entailed an analysis of multiple large data sets using advanced epidemiological methods such as systematic reviews, meta-analysis and multi-level modelling. It was found that the burden of vaccine-preventable diseases is high among HIV-exposed children in Africa. Using current vaccination schedules, HIV-infected children are less likely to be optimally protected against vaccine-preventable diseases compared to HIV-unexposed children. However, no substantial difference in vaccination coverage was found between children of HIV-positive and those of HIV-uninfected women in Africa.

*Supervisor:* Prof C Wiysonge

*Co-supervisor:* Dr O Uthman (external)

### **ALBLAS, Amanda (Anatomy)**

#### *Assessment of health status in a 20th-century skeletal collection from the Western Cape*

Skeletal collections provide an opportunity to observe the influence of various demographic, behavioural and environmental variables on health status. This study aimed to macroscopically and radiologically examine 624 adult individuals from the Kirsten Skeletal Collection for skeletal markings. Lower socio-economic societies, such as many South African black and coloured population groups, demonstrated a high prevalence of malnutrition, metabolic deficiencies, tuberculosis and trauma lesions compared to the South African white population group. Therefore, it would appear that higher socio-economic societies escaped overcrowding, malnutrition and exposure to pathogens. The Kirsten Skeletal Collection is a valuable resource for future research projects in osteology and related fields.

*External supervisor:* Dr LJ Friedling

*Co-supervisor:* Ms LM Greyling

### **BERNER, Karina (Physiotherapy)**

#### *Biomechanical analysis of specific motor impairments contributing to early functional decline in adults living with HIV-1 infection: A sub-study to the Cape Winelands HAART to HEART (Prevalence) / EndoAfrica study*

People living with HIV infection (PLHIV) now have a near-normal life expectancy, but functional limitations due to the disease process and treatment remain a concern. This study investigated walking and balance limitations in PLHIV using 3-D motion analysis, and identified the most valid community-screening test. The findings showed that young adults (mean: 35 years) living with HIV have walking and balance problems, resulting in a higher rate of falls compared to community controls. At community level, the five times sit-to-stand test is recommended as a valid early screening tool to plan appropriate interventions.

*Supervisor:* Prof QA Louw

*Co-supervisors:* Prof J Baumeister, Dr L Morris

### **BLIGNAUT, Marguerite (Medical Physiology)**

#### *An investigation into the role of ATM protein in the mitochondrial defects associated with the cardiovascular pathology resulting from insulin resistance*

A genetic disease, ataxia telangiectasia, caused by ineffective or absent ATM protein, triggers neurodegeneration, cancer, insulin resistance, Type 2 diabetes and ischaemic heart disease. It was previously found that obesity results in low ATM expression. In this study, cell lines and rats were used to investigate the role of ATM in obesity-related heart disease, showing that it is affected by high levels of fatty acids and insulin. The novel finding was made that ATM associates with the inner mitochondrial membrane where its inhibition lowers ATP synthesis, Complex I activity and mitochondrial fission. Obesity-induced low levels of ATM may therefore cause mitochondrial dysfunction and heart disease.

*Supervisor:* Prof B Huisamen

*Co-supervisors:* Profs A-M Engelbrecht, A Lochner, Dr D van Vuuren

### **CHIKWANHA, Theodora Mildred (Occupational Therapy)**

#### *Exploring factors shaping family involvement in promoting the participation of adults with substance use disorders in meaningful occupations*

Adults with substance use disorders approximate 60% of readmissions at the main acute mental health units in Zimbabwe. No rehabilitation, psychosocial support or follow-up programmes are available, thereby leaving families to take on the caring role. This study examined the extent to which family involvement promoted participation in meaningful occupations by adults recovering from substance use disorders. Narrative interviews with 14 purposively selected family units confirmed families' centrality in the recovery process; they identified opportunities and facilitated reconstruction of participation in health-enhancing occupations. An occupation-based framework, incorporating families, was developed as a sustainable approach to providing occupational therapy services.

*Supervisor:* Prof L van Niekerk

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

### **CLUVER, Catherine Anne (Obstetrics and Gynaecology)**

#### *The Preeclampsia Intervention with Esomeprazole (PIE) trial: A double-blind, randomised, placebo-controlled trial to treat early-onset severe preeclampsia*

Preeclampsia, the most serious hypertensive disorder of pregnancy, remains a leading contributor to maternal and perinatal mortality and morbidity worldwide. Esomeprazole, a potential therapeutic for preeclampsia, was tested in a double-blind randomised controlled trial. The impact of foetal growth restriction on pregnancy latency, obstetric, maternal and perinatal outcomes among women undergoing expectant management of preterm preeclampsia was assessed. The role of expectant management for hypertensive disorders of pregnancy after 34 weeks' gestation was assimilated in a Cochrane review. This study provides new information on a candidate therapeutic for preeclampsia and assessed clinical aspects of the management of hypertensive disorders.

*Supervisor:* Prof GB Theron

*Co-supervisors:* Profs S Tong, S Walker (external)



**EZEKANNAGHA, Oluchi Julie (Nutritional Sciences)**

*Development of a roadmap for mainstreaming nutrition-sensitive interventions in Anambra and Kebbi states, Nigeria*

The aim of the study was to develop a roadmap for mainstreaming nutrition sensitivity in Anambra and Kebbi states, Nigeria. The study used a four-phased convergent parallel mixed methods design, using the small area estimation for stunting prevalence and the Mainstreaming Nutrition Initiative assessment framework for the assessment of the domains of epidemiology and operational and political commitment. The results showed that stunting prevalence estimations varied across the states. While the programmes assessed were averagely nutrition-sensitive, most of them had excellent potential to be highly nutrition-sensitive. From these findings, a roadmap for mainstreaming nutrition sensitivity was developed and most stakeholders agreed that the roadmap would be implementable and feasible.

*Supervisor:* Prof XG Mbhenyane

*Co-supervisors:* Profs S Drimie, D von Fintel, Dr B Maziya-Dixon (external)

**IDZERDA, Leanne Carin (Nutritional Sciences)**

*Design of an architectural framework for a health assessment information system for urban agriculture interventions in low-resource settings using a soft systems approach to information system design*

Urban agriculture interventions have not demonstrated the expected improvements to nutrition outcomes in low-resource settings. The study developed an architectural framework for a technology-supported information system, named the Health Assessment Information System for Urban Agriculture Interventions in Low-resource Settings (HAIS) tool, to support programme managers to design nutrition-sensitive interventions. Using conceptual analysis and soft systems methodology, the architectural framework of the HAIS was developed based on activities and information needs of programme managers. It lays the theoretical foundation for a decision tool for programme managers in low-resource settings to improve nutrition outcomes through urban agriculture initiatives.

*Supervisor:* Dr MH McLachlan

*Co-supervisor:* Prof W Michalowski (external)

**KOTZÉ, Leigh Ann (Molecular Biology)**

*Characterization of the Innate and Adaptive Immune Systems during Active TB Disease and during Treatment*

Control efforts against tuberculosis, the leading cause of death due to an infectious agent, are hampered by incomplete understanding of protective immune mechanisms. In this study, soluble and immune cell-associated markers were investigated in blood of tuberculosis patients. Whereas acute-phase proteins were confirmed to have promising diagnostic potential, the evaluation of cell surface markers as treatment response indicators did not ratify their initial promise. Immune-suppressive effects of an innate immune cell subset, myeloid-derived suppressor cells, on T-cells were found during active tuberculosis and these cells are potential targets for host-directed immunotherapies.

*Supervisor:* Prof G Walzl

*Co-supervisor:* Dr N du Plessis

**LOUW, Derine (Psychiatry)**

*Cognitive training in patients with trichotillomania*

Individuals with hair-pulling disorder (HPD, or trichotillomania) present with hair loss due to continuous pulling, repeated attempts to decrease or stop the behaviour and significant distress. There are challenges in managing the condition. A single-blind, randomised placebo-controlled, five-week, 25-session cognitive working memory training programme was implemented in 30 adults with HPD. Cognitive training decreased hair-pulling severity after five weeks and maintained its effects after three months. Working memory improved from baseline to post-training. Although experienced as an acceptable and feasible intervention method, the cost-effectiveness thereof remains problematic. Further work is also needed to understand the mechanism underpinning the intervention.

*Supervisor:* Prof C Lochner

*Co-supervisor:* Prof DJ Stein (external)

**NED, Lieketseng Yvonne (Health Sciences Rehabilitation)**

*Reconnecting with indigenous knowledge in education: Exploring possibilities for health and well-being in Xhosa, South Africa*

Located within an indigenous knowledge system paradigm, this case study of narratives with AmaBomvane explored the potential relevance of indigenous knowledges in transforming education for better health and well-being. Three typologies (*Amaqaba*, *Amagqobhoka* and *Agonizers: the uncomfortable in-betweeners*) revealed ongoing entangled operations of coloniality, which translate into risky health behaviours. This positions the current education as colonial and a negative social determinant of health. Linking everyday doing, knowing and being is central to knowledge production, doing and being well. The study offers an indigenous-decolonial framework for reconstructing curriculum that centres health and well-being as a core area of learning.

*Supervisor:* Prof G Mji

*Co-supervisors:* Profs E Ramugondo, P de Vlieger (external)

**OHAJUNWA, Chioma Ogochukwu (Health Sciences Rehabilitation)**

*Understanding, interpretation and expression of spirituality and its influence on care and well-being: An explorative case study of a South African indigenous community*

Positioned within a constructivist interpretive paradigm, this study explored ways in which African indigenous communities engage with their spirituality to influence collective care and well-being. The outcomes showed that spirituality is understood as a multi-level caring relationship. These understandings are influenced by history, context and access to spiritual resources to position African indigenous communities within the subliminal, liminal and supraliminal spaces on a continuum of well-being, supporting cultural disruption, which is a life stressor or cultural continuity to influence well-being. Narratives of participants regarding *ubuntu* were utilised to build a thesis on an understanding of African indigenous transcultural spirituality to inform well-being.

*Supervisor:* Prof G Mji

*Co-supervisor:* Dr R Kalenga (external)

**OKWUNDU, Charles Ifeanyichukwu (Epidemiology)**

*Transcutaneous bilirubin screening for hyperbilirubinemia in African newborns*

Severe neonatal hyperbilirubinemia constitutes an important cause of disease and deaths in newborns in Africa. This study entailed a complementary set of epidemiological studies (including a cross-sectional study, a randomised trial and two systematic reviews) to provide evidence of the use of transcutaneous bilirubin screening in a population of indigenous African newborns. Overall, the findings showed that pre-discharge transcutaneous bilirubin measurement screening can be used in the African setting to identify newborns in need of phototherapy and those who are at risk of readmission for hyperbilirubinemia after discharge.

*Supervisor:* Prof C Wiysonge

*Co-supervisors:* Prof BK Butani (external), Prof J Smith

**OLUWOLE, Oluwafemi Gabriel (Human Genetics)**

*Implementation of targeted resequencing strategies to identify pathogenic mutations in Nigerian and South African patients with Parkinson's disease*

This study entailed a comprehensive literature review on Parkinson's disease in Nigeria (now published in *Parkinsonism & Related Disorders*) and found only two genetic studies. The research focused on identifying pathogenic mutations in black South African and Nigerian Parkinson's disease patients. DNA samples from patients were screened for changes in 751 different genes using next-generation sequencing, and 14 655 rare variants were found. Various scoring algorithms were then used to select 60 variants with the highest probability for being deleterious. The results lay the foundation for future work on genetic risk factors for Parkinson's disease in African populations.

*Supervisor:* Prof SH Kuivaniemi

*Co-supervisor:* Prof G Tromp

**OYSTRECK, Darren Thomas (Ophthalmology)**

*Congenital and genetic disruptions of human ocular motility and alignment—phenotypic/genotypic bi-directional algorithm*

Our understanding of congenital genetic disorders leading to disruption of human ocular motility and alignment has expanded significantly over the past decade, largely due to advances in genetic testing. The result is a knowledge disconnect between laboratory scientists and clinicians. This study addressed this gap by enrolling 845 subjects with these rare heterogeneous genetic disorders in five different countries. All patients were personally examined. The clinical data generated allowed for the design of a new classification system based on phenotypic and genotypic mechanisms accounting for these congenital disorders. A simplified clinical approach was verified, thereby assisting the general clinician/ophthalmologist who encounters these conditions.

*Supervisor:* Prof D Meyer

**PITTS, Stephanie (Human Genetics)**

*Genome-wide associations between human genotypes and Mycobacterium tuberculosis clades causing disease*

Several lines of evidence show that host genetic factors play crucial roles in susceptibility to different strains of *Mycobacterium tuberculosis* (*M.tb*), the tuberculosis-causing bacterium. Few studies have investigated the influence of variants in individual genes on this variable susceptibility; however, no study has investigated this on a genome-wide level. In the first study of its kind, this study developed a new bioinformatics pipeline to perform a genome-wide association study investigating susceptibility to different clades of *M.tb* in two African cohorts and found an association with polymorphisms on Chromosome 15 and increased susceptibility to tuberculosis caused by the East African/India clade.

*Supervisor:* Prof CJ Kinnear

*Co-supervisors:* Profs EG Hoal van Helden, M Möller, G Tromp, G van der Spuy

**SCHOUW, Darcelle Desire (Family Medicine)**

*How to transform the workplace environment to prevent and control risk factors associated with non-communicable chronic diseases*

Non-communicable diseases are major causes of premature deaths in South Africa. This study designed, developed, implemented and evaluated a Healthy Choices at Work (HCW) programme at a commercial power plant in the Western Cape. The HCW programme focused on the food supply, opportunities for physical activity, individual health risk assessment and behaviour change counselling as well as engagement of the leadership. The study demonstrated a significant impact on fruit and vegetable intake, physical activity, alcohol intake, blood pressure, cholesterol and psychosocial stress factors. The study used novel mixed methods and the lessons learnt can be transferred to similar workplace settings.

*Supervisor:* Prof RJ Mash

*Co-supervisor:* Dr T Kolbe-Alexander (external)

**SCHURZ, Haiko (Human Genetics)**

*Sex bias and tuberculosis susceptibility: Bioinformatic and biostatistical evaluation of trans-ethnic genomic datasets*

Globally, tuberculosis incidence rates for men are nearly twice as high compared to that of women. Socioeconomic and environmental factors as well as behaviour and sex hormones contribute to this bias, but do not fully account for it, suggesting a genetic component. The understudied X chromosome contains a high density of genes and is a good candidate for investigating sex bias. An in-depth, sex-stratified and X chromosome-specific analysis and meta-analysis were done to elucidate the male bias in tuberculosis. The results showed strong sex-specific effects and highlight the importance of sex-stratified and X chromosome analysis.

*Supervisor:* Prof M Möller

*Co-supervisors:* Profs C Kinnear, G Tromp, EG Hoal van Helden

**SMIT, Marli (Medical Physiology)**

*The manipulation of autophagy during early and late reperfusion: The effect on myocardial protection*

Hierdie studie het 'n ondersoek behels na die manipulasie van outofagie (opruiming van beseerde en dooie hartweefsel) as 'n meganisme om die hart teen herperfusiebesering te beskerm. In die rothart-model onderwerp aan iskemiese besering is outofagie geïnhibeer en gestimuleer met 3-metieladenien (3MA) en rapamisien. Chlorokien en Western klad-metodiek is gebruik om die outofagiebalans te bestudeer en hartskaie is gedefinieer met funksionele herstel en infarkt-grootte. Die resultate het getoon dat vroeë toediening van 3MA beskermende eienskappe het, te danke aan konvensionele en alternatiewe outofagiepaaie, apoptotiese induksie en direkte effekte. Laat manipulasie van outofagie hou geen voordeel in nie.

**Promotor:** Prof AR Coetzee

**Medepromotors:** Profs A Lochner, H Strijdom

**SMIT, Sybrand Engelbrecht (Medical Physiology)**

*The effect of green rooibos extract on rat hearts in a prediabetic model: An evaluation of functions and mechanism involved*

In the context of cardiovascular disease, the leading cause of death globally, this study investigated the cardioprotective effects of a specific extract made from *Aspalathus linearis* (rooibos tea) prepared by Afriplex (GRT™) by feeding it for eight weeks to either control or obese rats. *Ex vivo* perfusion of isolated hearts and analysis of the proteins expressed in the tissue showed that GRT™ ingestion improved functional recovery and reduced infarct size post-ischaemia in the compromised hearts from obese animals. It decreased oxidative stress and acted through anti-inflammatory mechanisms. GRT™ ingestion therefore shows promise as treatment option in obesity-related adverse cardiovascular outcomes.

**Supervisor:** Prof B Huisamen

**Co-supervisors:** Drs E Marais, R Johnson

**STEWART, Barclay (Public Health)**

*Multilevel system assessment of the Ghanaian emergency, trauma and surgical care system: A roadmap for development*

This study developed and executed a multi-level assessment of the Ghanaian emergency, trauma and surgical care system. Contrary to conventional wisdom, no association was found between surgical capacity and output. The study demonstrated that several unmeasured factors, such as differential barriers to care, process components and system governance, were important for improving service delivery to meet population needs. A system-wide roadmap for emergency care system development was drafted. This involved developing and piloting the use of a barriers-to-care assessment tool, context-appropriate audit filters to investigate process metrics and the WHO Emergency Care System Assessment Tool in Ghana.

**Supervisor:** Prof J Volmink

**Co-supervisor:** Dr D Clarke (external)

**VAN VUUREN, Mignon Albertha (Medical Physiology)**

*An investigation into the anti-hypertensive effects of green rooibos tea extract (GRT™)*

Hypertension is a co-morbidity of obesity. This study used hypertensive obese rats to investigate the anti-hypertensive potential of a specific extract of *Aspalathus linearis* (rooibos) prepared by Afriplex (GRT™). The blood pressure of the animals was monitored over 16 weeks, including eight weeks' GRT™ ingestion. The reactivity of the vascular bed was measured *ex vivo* and endothelial cells were used to test effects of GRT™ on nitric oxide production or ACE inhibition. GRT™ ingestion lowered the elevated blood pressure and improved vascular function of the animals. It was also anti-obesogenic and anti-hyperglycaemic. Increased urinary glucose excretion pointed to possible SGLT2 inhibition as mechanism.

**Supervisor:** Prof B Huisamen

**Co-supervisors:** Prof D Dietrich, Dr S Windvogel

## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

### *Fakulteit Agriwetenskappe* *Faculty of AgriSciences*

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

Chiwawa, Trust (Sustainable Agriculture)  
Davenport, John Evan (Sustainable Agriculture)  
Du Plessis, Hendrik Pienaar (Sustainable Agriculture)  
Julies, Jerobiam Marvin (Wine Biotechnology)  
Kufa, Amanda (Wine Biotechnology)  
Magagula, Mxolisi Meshack (Entomology)  
Mamba, Lindokuhle Cyril (Plant Pathology)  
Mathulwe, Letodi Luki (Entomology)  
Vogel, Dominic (Wine Biotechnology)

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

Du Preez, Francois (Entomology)  
Gevers, Claudia (Wine Biotechnology)  
Jolliffe, Jenna Bryanne (Plant Pathology)  
Links, Stefan Lester (Plant Pathology)  
Masikane, Siyethemba Lindokuhle (Plant Pathology)  
Matthews, Megan Ceris (Plant Pathology)  
Rebel, Philip (Plant Pathology)  
Snyman, Carla (Wine Biotechnology)  
Tembo-Phiri, Chimwemwe (Sustainable Agriculture)  
Van der Merwe, Rhona (Plant Pathology)  
Van Jaarsveld, Wynand Jacobus (Plant Pathology)  
Van Wyk, Tertia (Plant Pathology)  
Vermaak, Mia (Entomology)  
Williams, Davin Lance (Wine Biotechnology)

#### **Magister in die Natuurwetenskappe in Landbou** **Master of Science in Agriculture**

Burger, Marelee (Animal Science)  
De la Porte, Michael Robert (Agricultural Economics)  
Gericke, Stephan Johann (Animal Science)  
Hoogendijk, Karla (Soil science)  
Langa, Nongcebo Portia (Oenology)  
Ntombela, Bongani Nkosinathi (Agronomy)  
Prinsloo, Marlien (Animal Science)  
Shereni, Clyde (Horticultural Science)  
Silwana, Sibongiseni (Agronomy)  
Smit, Ernst Hendrik (Agronomy)  
Van der Merwe, Johanet (Animal Science)  
Van der Vyver, Anesmé (Animal Science)  
Van Heerden, Stefanus Gerhardus (Soil science)  
Van Niekerk, Timothy Chad (Agronomy)  
Viljoen, Mauritz Johann (Aquaculture)  
White, Vivian George (Soil science)  
Williams, Chericke Ann (Animal Science)

#### **Magister in die Natuurwetenskappe in Landbou Cum Laude** **Master of Science in Agriculture Cum Laude**

Cameron, Anouska (Horticultural Science)  
Engels, Retha Annette (Animal Science)

Morris, Courtney Anne (Entomology)  
Truter, Werner (Horticultural Science)  
Van Rooyen, Rianco (Oenology)

#### **Magister in die Natuurwetenskappe in Bosbou- en Houtwetenskappe** **Master of Science in Forestry and Wood Sciences**

Mngomezulu, Lehlohonolo Benjamin (Wood Product Science)  
Stephan, Johan Carl Jacobus (Forest Science)  
Van Groeningen, Trevor James (Wood Product Science)  
Van Heerden, Benjamin (Forest Science)  
Zhangazha, Francis Tinashe (Forest Science)

#### **Magister in die Natuurwetenskappe in Bosbou- en Houtwetenskappe Cum Laude** **Master of Science in Forestry and Wood Sciences Cum Laude**

Tshavhungwe, Vuhwavho (Wood Product Science)

#### **Magister in die Natuurwetenskappe in Bewaringsekologie** **Master of Science in Conservation Ecology**

Cogill, Liam Sean (Conservation Ecology)  
Swanepoel, Pascale (Conservation Ecology)

#### **Magister in die Natuurwetenskappe in Bewaringsekologie Cum Laude** **Master of Science in Conservation Ecology Cum Laude**

De Araujo, Liana Isabel (Conservation Ecology)  
Galloway, Alistair Duncan (Conservation Ecology)  
Turner, Sophia Carmel (Conservation Ecology)

#### **Magister in die Natuurwetenskappe in Voedsel- en Voedingsekerheid** **Master of Science in Food and Nutrition Security**

Mpanza, Hlanzeka Nompilo (Food and Nutrition Security)

#### **Magister in die Natuurwetenskappe in Voedsel- en Voedingsekerheid Cum Laude** **Master of Science in Food and Nutrition Security Cum Laude**

Barr, Alison (Food and Nutrition Security)  
Lategan, Anja (Food and Nutrition Security)

#### **Magister in die Natuurwetenskappe in Voedselwetenskap** **Master of Science in Food Science**

Daniels, Gaynor Adele  
Pretorius, Karla  
Van As, Jan Singleton  
Van Zyl, Nicola Jean

#### **Magister in die Natuurwetenskappe in Voedselwetenskap Cum Laude** **Master of Science in Food Science Cum Laude**

Laubscher, Anika  
Payne, Kiah  
Sivhute, Elizabeth Musigeni

**Magister in die Wysbegeerte  
Master of Philosophy**

Makhamisi, Hlengani John (Livestock Industry Management)

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

Marais, Junré (Plant Pathology)

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

Goldsmith, Angel Apehele  
Mathenjwa, Ayanda Mfanafuthi  
Mthembu, Londiwe  
Sinuka, Lelethu Thango

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

Van Dijk, Elané

**Nagraadse Diploma in Agronomie  
Postgraduate Diploma in Agronomy**

Booyesen, Vernon

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

Badenhorst, Willem Stephanus (Viticulture and Oenology)  
Bailey, Wendy Camrodeen (Agronomy and Plant Pathology)  
Blom, Marco Jean (Soil Science and Viticulture)  
Blume, Andreas Sebastian (Soil Science and Horticulture)  
Cadle, Damien Louis (Viticulture and Oenology)  
Calitz, Gert Johannes (Viticulture and Oenology)  
Campbell, Sarah Roseanne (Animal Science with Conservation Ecology)  
Coetzee, Pieter (Viticulture and Oenology)  
Du Toit, Pierre Francois (Soil Science and Agronomy)  
Eksteen, Gabriël Petrus (Agronomy and Genetics)  
Freemantle, Lennox (Agricultural Economic Analysis and Management)  
Hadebe, Ziyanda Precious (Agricultural Economics with Food Science)  
Hamza, Zizipho (Soil Science and Agronomy)  
Jamme, Félicie Marie Martine (Animal Science with Agronomy)  
Kapp, Dirk Lotter (Viticulture and Oenology)  
Kotzé, Petrus Fachulyn (Animal Science)  
Masikane, Thembelani Blessing (Agronomy and Plant Pathology)  
Matiwane, Rimelda Emmarentia (Agricultural Economic Analysis and Management)  
Modena, Dominique (Viticulture and Oenology)  
Mokheseng, Thembisele Cynthia (Viticulture and Oenology)  
Patel, Sulaimaan (Agricultural Economic Analysis and Management)  
Van der Nest, John Richard Ruan (Soil Science and Agronomy)

**Baccalaureus in die Natuurwetenskappe in Bosbou en  
Houtwetenskappe  
Bachelor of Science in Forestry and Wood Sciences**

Ingabire, Francine (Forestry and Natural Resource Sciences)  
Mahadeo, Leeshan (Forestry and Natural Resource Sciences)  
Twala, Lindiwe Precios (Forestry and Natural Resource Sciences)  
Van Niekerk, Pieter Daniel (Wood and Wood Product Sciences)

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

Afrika, Mitch Anvar  
Camagu, Nolumanyano Sesona  
Danckwerts, Matthew John  
Fischer, Sophie Katarina  
Foden, Lauren Ashleigh  
Grobler, Andrea  
Pearse, Emma Nicole  
Rink, Steven

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

Abdullahi Hassan, Faisa (Food Science with Chemistry)  
Basson, Salene Hamlin (Food Science with Biochemistry)  
Corbett, Kyle (Food Science with Biochemistry)  
Daniels, Lauren Catherine (Food Science with Biochemistry)  
De Waal, Sheree-Lee (Food Science with Biochemistry)  
Erlangsen, Gregory Christian (Food Science with Biochemistry)  
Goosen, Lise-Mari (Food Science with Biochemistry)  
Van der Watt, Shannon Kelly

**Baccalaureus in Landboubestuur  
Bachelor of Agricultural Management**

Grenzebach, Philipp Joseph  
King, George Alan

**Baccalaureus in Landbou  
Bachelor of Agriculture**

Blom, Dihan  
De Necker, Liana  
Deetlefs, Philippus Petrus  
Dreyer, Zandi  
Galant, Mosche Fernholdt Henry  
Huistra, Julius  
Lande, Nontsikelelo Yvonne  
Louw, Marnel  
Luttig, Willem Jordaan  
Muller, Jock Rynard  
Olivier, Louis  
Potgieter, Stephan  
Prins, Wynand Pieter  
Wilken, Ruan Andre

## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

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

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

Adams, Kim Terry-Ann (Pharmacology)  
Apari, Emmanuel Hammer (Clinical Epidemiology)  
Bergsteedt, Bryan Jason (Anatomy)  
Bhadula, Cebisa (Medical Physiology)  
Cracknell, Tamsin (Clinical Epidemiology)  
Custodio, Michael (Clinical Epidemiology)  
De Buys, Keren (Human Genetics)  
Dreyer, Rita Liezl (Human Anatomy)  
Du Plessis, Catharina Elizabeth (Pharmacology)  
Dzikiti, Moleen (Biostatistics)  
Kuhlase-Dlamini, Sehlephi Sebanelo (Clinical Epidemiology)  
Maluleke, Tswananani (Molecular Biology)  
Mapangisana, Tichaona (Biostatistics)  
Mapfumo, Cladnos (Biostatistics)  
Matsebula-Myeni, Zinhle Charity (Pharmacology)  
May, Thandokazi Queeny (Pharmacology)  
Mesatywa, Pumla (Molecular Biology)  
Mhlongo, Shibe Xasile Eudoxia (Biostatistics)  
Mohlapholi, Mohlapoli S (Medical Physics)  
Motaung, Bongani (Molecular Biology)  
Mukonkole, Suzan Nyema (Clinical Epidemiology)  
Munasur, Sudhir Lalchand (Clinical Epidemiology)  
Nxumalo, Nqobile Valencia (Human Genetics)  
Schmidt, James Christopher Frank (Biostatistics)  
Sebate, Boiketlo Prudence (Human Genetics)  
Swana, Nelisiwe (Epidemiology)  
Tshimanga, Belinda Kena (Clinical Epidemiology)  
Ubeh, Chidimma Silvia (Clinical Epidemiology)  
Van Diemen, Natalie (Clinical Epidemiology)  
Varathan, Olivette (Medical Virology)

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

Boshoff, Anel Willamien (Medical Physiology)  
Foiret, Jaudon Ron (Anatomy)  
Hendricks, Lynn (Clinical Epidemiology)  
Jaffer, Shahista Mustafa (Clinical Epidemiology)  
Kotze, Andrea (Medical Virology)  
Marais, Johan Christian (Human Anatomy)  
Marincowitz, Maria Elizabeth Clara (Medical Physiology)  
Millar, Danielle Ann (Medical Physiology)  
Moore, Dannielle Keagen (Molecular Biology)  
Samupindi, Shingirayi Irene (Clinical Epidemiology)  
Steyn, Cheyenne (Reproductive Biology)  
Van Coller, Ansia (Medical Microbiology)  
Van Rijswijk, Amike (Medical Microbiology)  
Williams, Lois Esther (Medical Physiology)  
Young, Carly (Molecular Biology)

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

Allerton, Joshua Lennard (Family Medicine)  
Fourie, Ilze (Radiation Therapy)  
Griesel, Carla (Haematological Pathology)  
Jacobs, Hendrina Johanna (Anaesthesiology)  
Malusi, Zingisa (Anatomical Pathology)  
Mbungu, Nomaphelo (Obstetrics and Gynaecology)  
Mekebeb, Martha Bedelu (Family Medicine)  
Musonda, Aubrey (Nuclear Medicine)  
Nel, Pieter (Microbiological Pathology)  
Sayed, Javed (Family Medicine)  
Smit, Ida (Clinical Pathology)

#### **Magister in Menslikerehabilitasiestudies** **Master in Human Rehabilitation Studies**

Liebenberg, Anjanet Wanda (Rehabilitation)

#### **Magister in Menslikerehabilitasiestudies Cum Laude** **Master in Human Rehabilitation Studies Cum Laude**

Hall, Réhan (Rehabilitation)

#### **Magister in Patologie** **Master in Pathology**

Bell, Jody Lee (Haematological Pathology)  
Maepa, Setjie Welcome (Chemical Pathology)  
Van Rooyen, Evelyn Roselene (Anatomical Pathology)

#### **Magister in die Wysbegeerte** **Master of Philosophy**

Adams, Robyn Anne (Cancer Science)  
Butt, Jennifer Leigh (Gynaecological Oncology)  
Debley, Orleans Anukware (Family Medicine)  
Govender, Indrian (Health Professions Education)  
Kabwe, Lorita (Cardiology)  
Khan, Zureida (Child and Adolescent Psychiatry)  
Masike, Kebiditswe Nana Martha (Health Professions Education)  
Meckel, Marie (Health Professions Education)  
Mgobozi, Palesa Aviwe (Health Professions Education)  
Ngcobo, Keamogetse Julianah (Health Systems and Services Research)  
Noble, Julia (Infant Mental Health)  
Obadeji, Adetunji (Health Professions Education)  
Ojo, Lorenta Ikpeposa (Family Medicine)  
Omoniyi-Esan, Ganiat Olutoyin (Health Professions Education)  
Parker, Michelle Tracy (Neuropsychiatry: old age psychiatry)  
Pretorius, Jan St Elmo (Endocrinology)  
Snyman, Hendrik Willem (Cardiology)  
Thamahane, Moratuoza Suzan (Health Professions Education)  
Viljoen, Abraham (Rheumatology)  
Went, Amanda Jane (Health Professions Education)  
Williams, Elvin (Infant Mental Health)

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

Domingo, Abdul Kader (Addiction Psychiatry)  
Du Plessis, Margaretha Maresa (Health Systems and Services Research)  
Hassen, Muhammed (Nephrology)  
Mann, Theresa Naomi Carol (Health Systems and Services Research)

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

Mavindidze, Edwin  
Van der Vlugt, Kirsti

**Magister in die Verpleegkunde**  
**Master of Nursing**

Adams, Adian Leone  
Africa, Anne Beatrice  
Cilliers, Anna Christina Maria  
Dlamini, Prisca Sithembile  
Harmuth, Keryn  
Hoes, Maureen Shirley  
Janse van Rensburg, Renee  
Kubayi, Vulani Sharon  
Mather, Aamina Ali  
Posholi, Malerotholi Thabida  
Sauls, Peter Jonathan  
Shalonda, Simon

**Magister in Voeding**  
**Master of Nutrition**

Achar, Esther Amondi (Nutritional Sciences)  
Berry, Laura Jayne (Nutritional Sciences)  
Bronkhorst, Maryke (Nutritional Sciences)  
Holm, Adri (Nutritional Sciences)  
Muasya, Bibiana Jumwa Muasya (Nutritional Sciences)  
Röhrs, Stephanie Heidrun (Nutritional Sciences)  
Wilson, Joanna (Nutritional Sciences)

**Magister in Voeding Cum Laude**  
**Master of Nutrition Cum Laude**

Strydom, Klara (Nutritional Sciences)

**Magister in Fisioterapie**  
**Master of Physiotherapy**

Ibrahim, Ahmed Abdellattif  
Kriel, Saleema  
Lamprecht, Catherina Elizabeth  
Louw, Cecilia Elizabeth  
Maart, Shaun Daryl  
Meiring, Solane

**Magister in Fisioterapie Cum Laude**  
**Master of Physiotherapy Cum Laude**

Coetzee, Marisa  
Van Zyl, Reze

**Magister in Spraak-Taalterapie**  
**Master in Speech-Language Therapy**

Dhaya, Anisha

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

Cousins, Megan Lynn (Pathology)  
Doutie, Laeeqa (Physiology (Medical))  
Dyan, Ikhona Kuhle (Morphological Science)  
Ferguson, Lisa Marie (Physiology (Medical))  
Suleman, Rizwaana (Physiology (Medical))  
Van Niekerk, Nadia (Physiology (Medical))

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

Brown, Nicole Karen (Human Genetics)  
Long, Kelly Ann (Physiology (Medical))  
Pieterse, Rachel (Anatomy)

**Nagraadse Diploma in Verpleegkunde**  
**Postgraduate Diploma in Nursing**

Bolo, Nomlindelo (Primary Health Care)  
Bruton, Nicole Bernadette (Primary Health Care)  
Cebisa, Mzukisi (Nursing Management)  
Davids, Lorna Johanna (Primary Health Care)  
Engelbrecht, Celeste (Primary Health Care)  
Green, Hadley Deon (Primary Health Care)  
Hess, Alison (Primary Health Care)  
Le Roux, Anthony Garth (Primary Health Care)  
Marinus, Chantel (Primary Health Care)  
Mayimbana, Gloria Ntomboxolo (Primary Health Care)  
Mkutswana, Ncumisa Cynthia (Nursing Management)  
Olivier, Elsje Hester (Primary Health Care)  
Tshoni, Nokwazi (Primary Health Care)  
Yeki, Nyameka Nomaluthi (Primary Health Care)

**Nagraadse Diploma in Verpleegkunde Cum Laude**  
**Postgraduate Diploma in Nursing Cum Laude**

Bruiners, Shante Cynthia (Primary Health Care)  
Dietrich, Earl Lyle (Primary Health Care)  
Mouton, Christel (Primary Health Care)

**Nagraadse Diploma in Volwasse-kritiekesorg-verpleegkunde**  
**Postgraduate Diploma in Adult Critical Care Nursing**

Adams, Theresa  
Mbulawa, Nolizwe  
Msutu, Nosiselo Catherine

**Nagraadse Diploma in Volwasse-kritiekesorg-verpleegkunde Cum Laude**  
**Postgraduate Diploma in Adult Critical Care Nursing Cum Laude**

Mazhuvanchery Yacob, Elby

**Nagraadse Diploma in Gevorderde Verloskunde en Neonatale Verpleegkunde**  
**Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing**

Bangiso, Zoleka  
Flatwell, Eunice Veronica  
Fortuin, Charlene Juanita  
Jack, Phindiwe  
Kühn, Farren  
Mamfeguza, Noxolo Christina  
Masingili, Nombulelo  
Ngamgom Kambou Kemdem, Agathe  
Notshe, Sivenathi

**Nagraadse Diploma in Gevorderde Verloskunde en Neonatale Verpleegkunde Cum Laude**  
**Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Cum Laude**

Demas, Annelise Mercia

**Nagraadse Diploma in Operasiesaal-verpleegkunde**  
**Postgraduate Diploma in Operating Theatre Nursing**

Smit, Christelle

**Nagraadse Diploma in Gevorderde Psigiatrisie Verpleegkunde**  
**Postgraduate Diploma in Advanced Psychiatric Nursing**

Jacobs, Annalize  
Lethoko, Nomonde Rosemary  
Modise, Ignatia Xolisile  
Sineyile, Zuko

**Nagraadse Diploma in Verpleegonderwys**  
**Postgraduate Diploma in Nursing Education**

Chitimwango, Priscilla Chisanga  
Clarke, Margilo Sharon  
Davids, Nonkululeko Rosey  
Fourie, Gideon Gert  
Grootboom, Amelia Janice  
King, Franklin Patrick  
Kisting, Ella-Amanda Madelein  
Louwson, Randall Elton  
Mphaololi, Mamatuke Isabella  
Nzimande, Londiwe Nosiphoo  
Senama, Pitsi Hendricca  
Shao, Mpeo Shoeshoe Rose-Evelyn

**Nagraadse Diploma in Verplegings- en Gesondheidsdiensbestuur**  
**Postgraduate Diploma in Nursing and Health Service Management**

Cupido, Patricia Burnadene  
Dhladla, Nozipho Lorraine  
January, Portia Lindsay  
Le Roux, Ruané  
Majova, Sindiswa Glory-Peace  
Makasi, Asanda Pollen  
Mhlanga, Lotshiwe  
Mohlalisi, Mamello Joyce

Mvenyeza, Dunyiswa  
Napakade, Nomakholwa Virginia  
Sampson, Helga Helice  
Samuels, Georgian Geraan  
Shange, Nelisiwe Sylvia  
Silver, Bernadine  
Skepu, Thanduxolo  
Skorbinski, Wendy Jane  
Theys, Costa  
Van der Linde, Michelle Astrid  
Van Zyl, Aletta Margaretha  
Zingani-Xakalashé, Bukiwe  
Zoko, Ntokozo Wiseman

**Nagraadse Diploma in Verplegings- en Gesondheidsdiensbestuur Cum Laude**  
**Postgraduate Diploma in Nursing and Health Service Management Cum Laude**

Crowley, Talitha

**Nagraadse Diploma in Gesondheidsorgbestuur**  
**Postgraduate Diploma in Health Care Management**

Adam, Amina  
Blignaut, Hester  
Bolo, Vuyiswa  
Dankers, Melany  
Gayiya, Melikaya Benjamin  
Hansen, Amanda  
Hendricks, Yolanda  
Matakane, Prudence Nondwe  
Ningiza, Nomvuyo  
Poole, Deidre  
Raymond, Natasia Louise  
Tshali, Wezile Welcome

**Nagraadse Diploma in Gesondheidsorgbestuur Cum Laude**  
**Postgraduate Diploma in Health Care Management Cum Laude**

De Nobrega, Johanna Jacoba  
Dreyer, Charleston  
Muscat, Shelley  
Van Tonder, Gideon

**Baccalaureus in die Geneeskunde en Baccalaureus in die Snykunde**  
**Bachelor of Medicine and Bachelor of Surgery**

Faku, Thandokazi  
Hoosain, Aafreen  
Jasper, Mu-Azzam  
Johnson, Courtney  
Kingma, Kirsten  
Ngcetane, Pumeza Bukelwa  
Panjri, Aqeela  
Snyders, Andrea  
Van der Westhuizen, Melissa Simone  
Xulu, Njabulo Siduduzo



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

Collier, Caroline Ashby  
Ebrahim, A'ishah Bibi

**Baccalaureus in die Natuurwetenskappe in Fisioterapie**  
**Bachelor of Science in Physiotherapy**

Goliath, Lauren Darion

**Baccalaureus in die Natuurwetenskappe in Dieetkunde**  
**Bachelor of Science in Dietetics**

De Mooij, Magda Jacoba  
Rathgeber, Robyn-Louise Theresé



2

3 April 2019

10:00

## Fakulteit

### *Ekonomiese en Bestuurswetenskappe*

*Dip (Openbare Verantwoordbaarheid), NGDip (Besigheidsbest en Admin), NGDip (Dispuutbest), NGDip (Fin Beplanning), NGDip (Leierskapontw), NGDip (Omgewingsbes), NGDip (Ontwikkelingsfinansies), NGDip (Projekbest), NGDip (Toekomsstud), NGDip (VolbOntw), HonsBCom, maar slegs Openbare en Ontwikkelingsbest, HonsBPA, MPhil (Bestuursafn, Omgewingsbes, Ontwikkelingsfinansies, Toekomsstud, VolbOntw), MPA, MBA, PhD (Bestuurskool)*

## Faculty

### *Economic and Management Sciences*

*Dip (Public Accountability), PGDip (Business Managmnt and Admin), PGDip (DispSettlement), PGDip (FinPlan), PGDip (Leadership Dev), PGDip (EnvironMan), PGDip (Dev Finance), PGDip (ProjiMan), PGDip (Futures St), PGDip (Sustainable Dev), BComHons, but only Public and Development Management, BPAHons, MPhil (Managmnt Coaching, EnvironMan, Dev Finance, Futures St, Sustainable Den), MPA, MBA, PhD (Business School)*



# 2

## PROGRAM

- Staan asseblief*
- Staan asseblief*
- Sit asseblief*
- Staan asseblief*
1. Akademiese prosesie kom die saal binne.
  2. Sing van die Nasionale Lied (sien binnekant van die agterblad).
  3. Konstituering deur die Visekanselier.
  4. Verwelkoming deur die Visekanselier.
  5. Verwelkoming in Xhosa.
  6. Voorstelling van die eredoktorandus en toekenning van die eregraad deur die Visekanselier.
  7. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Visekanselier.
  8. Sluiting deur die Visekanselier.
  9. Akademiese prosesie verlaat die verhoog.

## PROGRAMME

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

## EREGRAAD | HONORARY DEGREE

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

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

### JOHN LATHAM

**vir sy visionêre, waagmoedige en innoverende leierskap deur sy akademiese instelling behendig deur uitdagende tye tot groot hoogtes te stuur; en vir die oordrag van sy hoog aangeskrewe en gewaardeerde kundigheid in hoërondewysbestuur in verskeie forums, ook as buitengewone professor aan die Universiteit Stellenbosch.**

Toe prof John Latham in 2013 as Visekanselier en Uitvoerende Hoof van Coventry Universiteit in die Verenigde Koninkryk (VK) aangestel is, is bewys dat hy die regte leier op die regte tyd vir sy instelling was.

Latham was aan die stuur van die reusetaak om 'n hoog aangeskrewe omkeerstrategie wat om 'n ondernemingsetos gebou is, in werking te stel. Onder sy leiding oes Coventry sedertdien wyd lof in vir sy studentgerigte benadering tot onderrig en leer, uitnemende studentetevredenheid, vernuwende metodes vir beter studentetoegang met sukses, 'n bedryfsgerigte navorsingstrategie en sy veel groter internasionale voetspoor – en dít alles in rekordtyd.

Danksy Latham se sukses is Coventry in 2014 as moderne universiteit van die jaar op die ligaranglyste van The Times en Sunday Times aangewys en as die VK se universiteit van die jaar in 2015. Coventry is in 2018 as die voorste nuwe universiteit (<50 jaar) in die Guardian University Guide en Complete University Guide aangewys. Die instelling was ook onlangs tweede uit 138 universiteite in die VK-regering se Teaching Excellence Framework (TEF).

Latham is 'n gewaardeerde rolspeler in verskeie forums. Die Universiteit Stellenbosch vind ook baat by sy kundigheid sedert sy aanstelling as buitengewone professor in die Departement Ondernemingsbestuur in die Fakulteit Ekonomiese en Bestuurswetenskappe.

**for his visionary, courageous and innovative leadership in skilfully steering his academic institution to greatness through troubling times; and for sharing his acclaimed and valued expertise in higher education management in various forums, including as extraordinary professor at Stellenbosch University.**

When Prof John Latham became Vice-Chancellor and CEO of Coventry University in the United Kingdom (UK) in 2013 he proved to be the right leader at the right time for his institution.

Latham took the lead in the mammoth task of implementing a highly acclaimed turnaround strategy with enterprise as central ethos. His leadership has since seen Coventry being lauded for its student-centred approach to teaching and learning, top student satisfaction rates, innovative methods to improve student access with success, an industry-focused research strategy and vastly improved international footprint – and for accomplishing this in record time.

Thanks to Latham's rapid success, Coventry was named modern university of the year in the league tables of The Times and Sunday Times in 2014, UK university of the year in 2015 and in 2018, the highest-ranked new university (<50 years) in both the Guardian University Guide and Complete University Guide. The recently published results of the UK government's Teaching Excellence Framework (TEF) placed Coventry second among the 138 universities assessed.

Latham is a valued contributor to several forums. Stellenbosch University (SU) too has benefited from his expertise since his appointment as extraordinary professor in its Department of Business Management in the Faculty of Economic and Management Sciences.

## Doktor in die Wysbegeerte

### Doctor of Philosophy

**BOOYSEN, Candice** (Business Management and Administration)

*Antecedents to the intention to quit amongst Generation Y information technology professionals in software development organisations in South Africa*

Overall, the topic is an acceptable question for the field of business management and administration, especially people, generational and talent management. Various turnover models were tested and the angle pertaining to job embeddedness with a mixed-method approach is unique, especially within the South African context.

*Supervisor: Dr B Mathur-Helm*

**GOVENDER, Loshni Sarvalogasperi**  
(Public and Development Management)

*A case study analysis of human resource management systems in higher education in South Africa*

This study addressed significant aspects in the discipline of human resource management, as there is a paucity of published scholarly data in developing countries and emerging economies (including South Africa) exploring factors currently impacting on human resource systems and models, human resource competencies and transformational leadership in terms of employee performance and satisfaction. While there are no research studies that have been conducted in higher education institutions in South Africa investigating the latter crucial variables, this study contributes to human resource management theory, concept, policy and practice.

*Supervisor: Prof P Pillay*

*Co-supervisor: Prof E Mantzaris*

**HABBERTON, Colin Vincer**  
(Business Management and Administration)

*Connecting capital: The factors influencing the decision-making process of institutional investors towards responsible investing*

The study is contemporary and could be of value to a large number of stakeholders who form part of the investment decision-making value chain. This study is a major contribution to our understanding of the way decisions are made about the largest investments that affect the development and evolution of society, and South Africa in particular. The primary aim of the study was to conceptualise the institutional investment value chain and to determine who makes decisions along this value chain, and how and why they make the decisions that they do. This was motivated by the normative commitment to responsible investment, justified and validated in terms of a global body of literature that is widely accepted across many disciplines.

*Supervisor: Prof S Viviers*

**LIMBO, Cedric Mwanota** (Public and Development Management)

*An analysis of the performance of state-owned enterprises in Namibia: Case studies in the transport sector*

The primary objective of this study was to analyse the performance of state-owned enterprises (SOEs) in the transport sector, identifying the critical factors that have contributed to the high or low performance of these enterprises. In order to better understand the performance profile of Namibian SOEs, the study set the following specific objectives: to assess and objectively determine the level of performance of Namibian SOEs in the transport sector; to examine the empirical evidence of factors responsible for the observed performance of SOEs in the transport sector; to design interventions to improve the performance of SOEs; and to recommend to government a set of measures with their associated implementation mechanisms to rationalise or optimise SOEs' performance.

*Supervisor: Prof E Schwella*

*Co-supervisor: Dr D Brand*

**MOLEKO, Nthabiseng Mateboho** (Development Finance)

*Pension fund reform towards development of national economy: A South African case study*

The study is the first empirical work that measures the extent and intensity of pension systems in improving capital market development, growth and savings rate in the South African context. The use of the Yamamoto approach adds to the literature in the pension-growth nexus. The four growth channels of pension assets, namely savings, capital market development, reduced labour market distortions and improved corporate governance, were explored rigorously in the study. The study explored a comprehensive analysis of the critical stakeholders, understanding their incentives and goals and balancing the interests of different stakeholders in pension assets.

*Supervisor: Prof S Ikhide*

**MQADI, Lwandle Jackie** (Public and Development Management)

*Integrated sustainability transition framework to guide governance of strategic electricity planning*

The South African electricity sector is characterised by a unique social, political and economic legacy of apartheid, which still profoundly impacts decision making and the contemporary politics of sustainability and transition towards a low-carbon energy economy. Through critical literature analysis, qualitative system dynamics and expert stakeholder engagements, the study conceptualised and tested an electricity sustainability transition framework to guide governance of strategic integrated electricity planning. The study established that a policy governance-driven framework, embedded in the Integrated Resources Plan, is vital to tackle issues of policy, governance, transparency, vested interests and associated politics, policy alignment, stakeholder engagement, and monitoring and evaluation.

*Supervisor: Prof J Musango*

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**MUGARURA, Jude Thaddeo**  
(Public and Development Management)

*Public private partnership governance for developing road infrastructure in Uganda: A public sector perspective*

This study provides vital additional knowledge related to the governance of public private partnerships (PPP) as well as the challenges and critical success factors of PPP implementation at both individual entity and national levels in emerging economies. The study focused on one of the areas where many governments in the sub-Saharan Africa region are implementing PPPs to boost their roads infrastructure. PPPs have received much attention from a broad field of disciplines, and this concept faced considerable scepticism in various countries. Uganda is also one of the counties that want to benefit from the application of PPPs in the road sector. A considerable number of sources were consulted to explain the utilisation of PPPs in government.

*Supervisor: Dr Z Ndevu*

**SMIT, Suzanne** (Public and Development Management)

*Connecting the urban informal settlement to the city: A system approach*

This study addressed important and under-studied focus areas: the condition and functions of informal settlements in which increasingly large proportions of our population reside. If South Africa is to address issues of poverty and inequality, it is exactly the communities that reside in these settlements that should be of priority concern. The value of this study is that it specifically addresses the need of such insight, adopting a particularly strategic and fruitful line of enquiry – that of the energy metabolisms within a specific informal settlement.

*Supervisor: Prof J Musango*

**VAN DER MERWE, Susara Elizabeth**  
(Public and Development Management)

*Advancing resilience assessment of the social dimensions of electricity supply in South Africa*

This study makes a significant contribution to the field of resilience assessment. It engaged with the concept of resilience from the perspective of an essential service. Importantly, it engaged with a technical system, that of an electricity utility, that needs to be understood in its social context. The study was framed around understanding the resilience of essential services, which is in itself a unique application of resilience theory. A fundamental departure point included the realisation that a resilient technical infrastructure is not enough to ensure the resilient supply of essential services. This is an important insight that also provides the rationale for focusing on the social dimensions in socio-technical systems that are responsible for providing essential services.

*Supervisor: Prof R Biggs*



## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

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

#### **Magister in die Handelswetenskappe**

##### **Master of Commerce**

Melton, Demi (Public and Development Management)

#### **Magister in die Wysbegeerte**

##### **Master of Philosophy**

Achieng, Therezah (Sustainable Development Planning and Management)  
Bloem, Shame (Sustainable Development Planning and Management)  
Boulton, Elaine Dennis (Management Coaching)  
Brandt, Nancy Lynne (Environmental Management)  
Brikkel, Delray Shaun (Futures Studies)  
Chihumbiri, Faith Kudzai (Environmental Management)  
Havenga, Maria Jacoba (Management Coaching)  
Janse van Rensburg, Willem Du Plessis (Management Coaching)  
Kadhila, Timoteus (Environmental Management)  
Masoetsa, Thakabanna Godfrey (Management Coaching)  
Minor, Andrew (Management Coaching)  
Morar, Jeeten (Sustainable Development Planning and Management)  
Mothebe, Moelo Makarabo (Management Coaching)  
O'Reilly, Eureka (Management Coaching)  
Swartz, Kyle (Sustainable Development Planning and Management)  
Swilling, Ranen Annecke (Sustainable Development Planning and Management)  
Tunyiswa, Ntombekaya Pearl (Management Coaching)  
Van der Vyver, Mathilda (Management Coaching)  
Van Greuning, Henrietta Reinetta (Futures Studies)  
Vundla, Nelisiwe Lynette (Environmental Management)  
Warren, Mark Brendan (Futures Studies)  
Yako, Tembile (Futures Studies)

#### **Magister in die Wysbegeerte Cum Laude**

##### **Master of Philosophy Cum Laude**

Foley, Robyn Caie (Sustainable Development Planning and Management)  
Gerber, Paul Benjamin (Futures Studies)  
Jardine, Siraj (Sustainable Development Planning and Management)  
Kotze, Victor Prosper (Management Coaching)  
Lane, Penelope Susan (Futures Studies)  
Makube, Nthathane Motlalepule Maggie (Management Coaching)  
Rickens, Erich William (Sustainable Development Planning and Management)  
Samson, Sonya (Sustainable Development Planning and Management)  
Strydom, Adél (Sustainable Development Planning and Management)  
Strydom, Euodia (Futures Studies)  
Willemsse-Snyman, Ruellyn Elmien (Futures Studies)  
Zeleke, Mersha Yilma (Sustainable Development Planning and Management)

#### **Magister in die Wysbegeerte in Ontwikkelingsfinansies**

##### **Master of Philosophy in Development Finance**

Ajayi, Olawunmi Ifeoluwa  
Busi, Francis Mondl  
Dirks, Alroy Deon

Hashali, Dorothea Mekulu  
Kahumbe, Chengaikane  
Katekwe, Genius  
Lamaswala-Sakala, Muyunda Rachel  
Laubscher, Erich  
Ledwaba, Bridget Mpho  
Mashanda, Tapiwa Frank  
Mashile, Daphne Mmapabala  
Masilela, Jane Jabulile  
Moipone, Brian Tetlo  
Molefe, Benjamin Kelapile  
Mothibi, Baeti  
Mphande-Chinyama, Chisimpheka Margaret  
Mtemeri, Clifford  
Mthombeni, Zanele Dawn  
Mukondeleli, Rofhiwa Given  
Mutamuko, Dylord Farai Dzikamai  
Mzila, Manqoba Philani  
Nkomo, Boitumelo  
Nxazonke, Busiswa  
Oyenyi, Ayodeji  
Pete, Theriso Dorothy  
Sao, Felicia Addobea  
Shino, Sofia Ndapwoudya  
Simasiku, Cletius Simasiku  
Sithole, Tshogofatso Magdeline  
Zenda, Benson Enias

#### **Magister in die Wysbegeerte in Ontwikkelingsfinansies Cum Laude**

##### **Master of Philosophy in Development Finance Cum Laude**

Buthlezi, Linda Velenkosini  
Malatsi, Koko Ditebogo

#### **Magister in Besigheidsbestuur en -administrasie**

##### **Master of Business Management and Administration**

Ackermann, Christiaan Gerhardus  
Alexander, Henry George  
Amuthenu, Ndapanda  
Andrews, Keith Daniel  
Asoka, Seelan  
Azemia, Jean-Axel Jerome Cedric  
Barbera, Natasha Leigh  
Bergins, Keenan  
Blair, Warren  
Booyens, Ciska  
Bosman, Johan  
Botha, Christoffel Johannes  
Brink, Hendrik Gerhardus  
Brown, Fre-Nay  
Buckle, Jacobus Hendrik  
Buckle, Juliana  
Buckle, Pieter Laubscher  
Buckus, Nasmera Bibi  
Burger, Alwyn Jacobus

Burger, Jaco  
Burger, Marike  
Chiwanda, Bridget  
Christiaan, Bertus Listen  
Cilliers, Izak Jacobus Coetzer  
Cloete, Francois  
Coetzee, Gerhardus Christiaan  
Cornelissen, Marius  
Creighton, Moegamat Shahied  
Davey, Micherle Joy  
De Jager, Jacques Peter  
De Jager, Josephus Jacobus  
De Nysschen, Jacobus Francois  
De Villiers, Christiaan Michael  
De Winnaar, Bernadine  
Dlamini, Asanda  
Doro, Simbai Muchinapo  
Droomer, Leonard Isadore Thomas  
Du Toit, Francois  
Du Toit, Gert Arnoldus  
Du Toit, Ruan  
Duvenhage, Jan Hendrik  
Els, Ewald  
Engelbrecht, Marisa  
Erasmus, Willem Johannes  
Eybers, Nicole  
Fata, Donna Felicity  
Fillmore, Gregory Shaun  
Fisher, Alvira Heleen  
Fleur, Timothy Lance  
Fourie, Cobus  
Franken, Hendrik Hermanus  
Gerber, Liezl  
Goncalves, Nicholas  
Govender, Shaun  
Hlope-Dlamini, Bhekiwe Vumile  
Hoffman, Bothale Adele  
Hyera, Leonard  
Itope, Idi  
Iyambo, Paulina Kandali  
Jansen van Rensburg, Nicolaas Hendrik  
Johnson, Germaine Richardo Lucianno  
Jooste, Guillaume Hendrik Christiaan  
Jooste, Jozef Henning  
Kamana, Elvin Mashanda  
Katjujanjo, Uanjengua  
Kemp, Francois  
Kikaya, Lusuasua Jimmy  
King, Charles  
Kitshoff, Rene  
Kotela, Beauty  
Kruger, Mome  
Landman, Matthys Gerhardus  
Le Roux, Zacharias Petrus  
Lebese, Tebogo David  
Liu, Xinglin  
Lombard, Jan Andries

Losper, Lyle Henry  
Lotter, Jacobus Johannes  
Lourens, Wessel Johannes  
Louw, Chanelle Caryn  
Mabidilala, McDonald Tshepo  
Mabotja, Sephton Tebogo  
Magenga, Sinqobile  
Magwentshu, Sivuyile  
Malesela, Mpsheboshogo Ngwato  
Maneveld, Letitia Lucinda  
Mapondera, Hosea Kadungure  
Mars, Olive Tamara  
Mathee, André  
Matshoza, Bongile Ricardo  
Mbebe, Olivia Pebetsi  
Mienie, Konrad  
Mitchell, Phemelo Mosadinyana  
Mkhize, Lindokuhle  
Mofokeng, Modiehi Tebello  
Mokgatle, Seleko Lebogang  
Mokoena, Maria Vuyiswa  
Mokwele, Lehlogonolo Georgina Desire  
Molefe, Neo Shadrack  
Monnig, Carl August  
Mouton, Willem Johannes  
Mpeta, Mlamleli Malusi Sivuyile  
Mpetshwa, Anele  
Muelelwa, Takalani  
Muller, Clayton  
Mushfieldt, Tarryn Gill  
Naidoo, Niveshen  
Nanyeni, Emilia Ndahambelela  
Naude, Jan Gysbert  
Neethling, Pieter Hendrik Theunissen  
Nel, Margaux  
Nene, Dumisile Patricia  
Nghimwenavali, David Nghiwanwa  
Ntshanga, Thembisile Lawrence  
Ntshangase, Sipehelele Nomathemba  
Nyathela, Nonhlanhla Cynthia  
Nyawo, Zandile  
Nyoni, Nontokozo Christine  
Nzanza, Bombiti Fifi  
Oliver, Martha Helena  
Pietersen, Carla Dominique  
Qwesha, Nyaniso  
Radebe, Khantse  
Raidoo, Deshan  
Ramogayane, Makoloi Ntebogeng  
Regal, Layla  
Rickers, Frederick Prim John  
Roberts, Ravell Redlus  
Roeleveld, Stephanus Ignatius  
Rudolph, Justin Reed  
Rynhoud, Don Beau  
Santos, Bruno Alexandre Quistorp  
Sayed, Yusuf

Schoeman, Edwina Joy  
 Shabalala, Ayanda Lindokuhle  
 Sheehama, Bennodictus  
 Shino, Saltiel Panduleni  
 Sigabi, Msimelelo  
 Smit, Johan Louis  
 Sondlo, Dumisani  
 Spann, Keenan  
 Steenkamp, Werner  
 Thomas, Leslie William  
 Tjiramba, Nguvitjita Jeney  
 Tjongarero, Monia  
 Tobias, Jean-Pierre Marcelle  
 Tolsma, Jacques Ricus  
 Van den Berg, Adriaan Erasmus  
 Van der Merwe, Brend Arthur  
 Van der Merwe, Mamus  
 Van der Merwe, Melanie Dominique  
 Van der Merwe, Rhyno  
 Van der Walt, Andre  
 Van der Watt, Stefanus  
 Van Harten, Celeste  
 Van Heerden, Johannes  
 Van Rensburg, Napoleon Jansen  
 Van Schalkwyk, Francois  
 Van Zyl, Jean Kobus  
 Van Zyl, Stefan Hardenberg  
 Verschaeve, Wouter  
 Viljoen, Robert Bartlett  
 Viviers, Melanie Hester  
 Vorster, Abraham Hercules  
 Vorster, Deon  
 Westley, Cindy  
 Wiese, Marius  
 Xongo, Ayabulela Siviwe  
 Zietsman, Retha Juhl

**Magister in Besigheidsbestuur en -administrasie Cum Laude**  
**Master of Business Management and Administration Cum Laude**

Ballim, Mohamed-Ozayr  
 Blom, Stephan Andre  
 Bosch, Marinus Johannes  
 Botes, Lu-Wayne  
 Botha, Elizabeth Maria  
 Bromfield, Wade Stuart  
 Choe, Julie Kim  
 Cloete, Uys  
 Collison, Kamilah  
 Costa, Ederson  
 Davidson, Marcia Christine  
 De Villiers, Gerit Johannes  
 De Vries, Gert Stefanus  
 Du Toit, Matthys Michielse  
 Du Toit, Pierre  
 Erasmus, Morkel  
 Franken, Cornelius Jacobus  
 Gotkin, Sean Kyle

Gouws, Ernst  
 Harry-Nana, Poonam  
 Hoarau, Stephen Paul  
 Holtshausen, Christoffel Barend  
 Johnson, Andrew William  
 Kajie, Salman  
 Khan, Muhammed Ridhwan  
 Kotze, Dirk Johann Coenraad  
 La Grange, Demetre  
 Laubscher, Michiel Christiaan  
 Lawrence, Justin  
 Lourens, Christo Le Roux  
 McKechnie, Ronald Angus  
 Molteno, Timothy Frank  
 Muvi-Tjikalepo, Heinrich Muatala  
 Odendaal, Eben David  
 Opperman, Anna Margaretha  
 Opperman, Mieke  
 Poolman, Mario  
 Price, Arthur  
 Saunders, Compton  
 Strydom, Andries Johannes  
 Toerien, Heinrich  
 Venter, Andro  
 Weideman, Jacques  
 Ziady, Christopher Charles Michael

**Magister in Publieke Administrasie**  
**Master of Public Administration**

Amadhila, Foibe Kandalindishiwo  
 Daku, Tshepo Harrington Patrick  
 Dames, Stephen Gordon  
 Giliomee, Nicola  
 Iwegbuna, Jerry Chukkwudi  
 Jacobs, Lindsey  
 Jacobs, Nkosinathi Paulus  
 Kernelle, Nicole Carol  
 Kgaphola, Leshoro Phinny  
 Kutuka, Cebo Penrose  
 Mathee, Sharifa  
 Maya, Siviwe  
 Molapo, Lebo  
 Oppelt, Carl Andrew  
 Sichone, Maria  
 Uwites, Michelle Felicia

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

Blankers, Bernadette Arlene (Public and Development Management)  
 Johnstone, Emma (Public and Development Management)  
 Kuhn, Dymian Rufus (Public and Development Management)  
 Mogosoana, Brian Maime (Public and Development Management)  
 Ngceke, Zizopho Zimkhitha (Public and Development Management)  
 Paulsen, Caitlin Jade (Public and Development Management)  
 Pietersen, Rozanne Maryka (Public and Development Management)  
 Walker, Darren Glen (Public and Development Management)

**Honneurs-Baccalaureus in Publieke Administrasie  
Bachelor of Public Administration Honours**

Adams, Zailia Vanessa  
Adonis, Dawid Jacobus  
Aupokolo, Mekondjo Albertus  
Carelse, Cliff Harold  
Chizabulyo, Haviety Nchabo  
Christoffels, Reuben Arnold  
Daries, Joseph Nathan  
Dhludhlu, Mthunzi Victor  
Dwanya, Neziswa Judith  
Dyani, Bernadette  
Endjala, Michael  
Gcwensa, Stanley Mduduzi  
Gova, Mzimasi Vuyolwethu  
Gumede, Mbongeni Harrison  
Hamunyela, Alli  
Haufiku, Sirkka Ndevatila  
Hlongwane, Harriet Tsakane  
Ipwaakena, Esther Namutenya  
Jack-Pama, Samkele  
Jackson, Zaida  
Jantjies, Debra Sphia  
July, Buyisile Albert  
Keka, Vuyolwethu  
Kgoete, Bethel Oupa  
Lesch, Shanley William  
Lubedu, Dumokazi Bianca  
Madubela, Nomaxabiso Mercia  
Mahlangu, Phillipine Keikemiseditse  
Makumbana-Badana, Kuvhanganani Collicia  
Mandlana, Asanda Ndzaliseko  
Manyathi, Nontobeko Ntandoyenkosi  
Mashigo, Mantsho  
Masina, Sphiwe Joyce  
Mataka, Zimasa Ondela  
Matiti, Ronnety Lushando  
Mato, Mzwanele Banele  
Matsika, Zimela  
Mdoda, Vuyiseka Cynthia  
Miggel, Nastasshia Juzaan  
Minnaar, Junius Neven  
Mkhumbuzi, Simphiwe Livingstone  
Moetji, Lebo Jackson  
Mohlouoa, Albert Khopiso  
Motsei, Dikeledi Koketso  
Mphambani, Ntombozuko Cyprian  
Mtholo, Ntombebandla  
Mtsotso, Sibonisiwe Boniswa  
Mutloane, Thato Portia  
Nakani, Ncebakazi Princess  
Ndaba, Thembelani Elvis  
Ndyawe, Nomasundu Muriel  
Ngubo, Bangilizwe Nation  
Nkuzo, Phumzile Sidney  
Nqoma-Matanda, Nqabomzi  
Oliphant, Anthea Cathly  
Parkies, Lesenyehlo Jeremiah

Ramedies, Denzel Andrew  
Riet, Phillip  
Satyi, Nosisi Kaya  
Sebata, Mankweng Herman  
Senamela, Genevieve Mahlatse  
Serfontein, Jacobus Hendrik  
Shipanga, Agnes  
Skosana, Nondzondelelo  
Stock, Dikgang Mathews  
Theletsane, Matsie Eva  
Tsholo, Aria Junior  
Twala, Charmaine Bridget  
Tyatyeka, Thabisa  
Valentine, Paul Cartrick  
Vandayar, Sathasivan  
Williams, John  
Zatu, Voti  
Zikalala, Velaphi Erens  
Zokufa, Sikelela Ronnie  
Zondani, Luvuyo Geddes

**Nagraadse Diploma in Leierskapontwikkeling  
Postgraduate Diploma in Leadership Development**

Bochedi, Tsatsi  
Bruintjies, Jesmaine  
Dikgosi, Moses  
Grovers, Lester Graeme  
Hector, Avril Elizabeth  
Hikwama, Baleseng  
Hlaba, Julia Bongwiwe  
Koeberg, Granton Sylvester Aristotiles  
Mafuze, Michael  
Magagula, Siyabonga  
Makhoali, Atamo David  
Makhwatha, Alexander  
Mampa, Sphiwe Ella  
Mavanyisi, Maporoma Irene  
Mokgalagadi, Ntombizodwa Helga  
Muruko, Damoline  
Ndamane, Vuyiseka  
Phillips, Raygen Eudrecia  
Radebe, Matjie Deliwe  
Schroder, Betty  
Shipiki, Elly Shoombe  
Shishonge, Nono Tunie Masana  
Sishi, Lungisa Nosipho  
Thavhana, Keaoleboga Princess  
Tshilenge, Phumla Patience  
Van den Eijkel-Otto, Amanda

**Nagraadse Diploma in Leierskapontwikkeling Cum Laude  
Postgraduate Diploma in Leadership Development Cum Laude**

Adams, Vera Jane  
Andrews, Aurion Patrick  
Bardien, Kashifa  
Hill, Kirsten  
Matthee, Amanda  
Meyer, Tracy Gail

Munnik, Ilse  
Neeson, Kevin Mark  
Petersen, Angelo Gregory  
Swartland, Leonie Angeline  
Thompson, Carolyn Anne  
Tredoux, Annelie  
Vena, Gcobisa Joy

**Nagraadse Diploma in Volhoubare Ontwikkeling  
Postgraduate Diploma in Sustainable Development**

Fick, Francis Leonora  
Geldenhuis, Kaliopé Anne  
Mathe, Zenkosi Babalwa Mbali  
Mba, Siwakhile Mawande  
Molangwane, Phuti Kholofelo  
Molapo, Relebohile  
Pama, Joshua  
Phefo, Tshepiso Eugene

**Nagraadse Diploma in Volhoubare Ontwikkeling Cum Laude  
Postgraduate Diploma in Sustainable Development Cum Laude**

Pauw, Ivan  
Varghese, Elizabeth Susan  
Vermaas, Rupert

**Nagraadse Diploma in Omgewingsbestuur  
Postgraduate Diploma in Environmental Management**

Cloete, Gertj Johannes Abraham  
Mabaso, Andrias Mzokhona  
Marabe, Koena  
Mogotshi, Mashedi Reinett  
Ndlovu, Thulani Silence  
Skoti, Nontsikelelo Amanda  
Tembe, Skhumbuzo Richard

**Nagraadse Diploma in Omgewingsbestuur Cum Laude  
Postgraduate Diploma in Environmental Management Cum Laude**

Von Kalm, Nicolas

**Nagraadse Diploma in Projekbestuur  
Postgraduate Diploma in Project Management**

Allie, Nasief  
Allison, Martha Johanna  
Davis, Joana Fonia  
Dingane, Siphokazi  
Dlamini, Nokuthula Patricia  
Engelbrecht, Mandi  
Erasmus, Jan-Carel Dawid  
Ganesh, Sathishwar  
Gwagwa-Mkhonta, Nozibusiso  
Haripersad, Nirisha  
Hloma, Nowhi Nongakubani Leticia  
Kazembe, Nathan Mukulakasuba  
Kewane, Phumzile Anthony  
Kotze, Richard Marais  
Kwofie, Isaac  
Maans, David Johannes  
Mabija, Julio Zuko

Macholo, Audrey Limakatso  
Mafuna, Sonwabile  
Mazolwana, Siphokazi Benedicta  
Mbangu, Paulus Kasera  
Mbomboyi, Siphelo  
Mbusi, Zanele Nontando  
Mnyandu, Nontobeko Tosca  
Mokgotho, Tshegofatso  
Mphachoe, Tlalane Dihedile Darlene  
Msimango, Sharon  
Naidoo, Kesendra  
Nelson, Chrizelle  
Netshiozwi-Neluvhalani, Rendani Betty  
Ngubentombi, Mbulelo Godwin  
Nkuna, Tirhani  
Ntshangase, Busisiwe  
Petse, Babalwa Claudette  
Pietersen, Dale Angus  
Ratshitanga, Cebisa  
Roach, Shane Leeroy  
Schroeder, Mateo Kermi  
Van Zyl, Sonja Jessica  
Wilton, Michael Graham

**Nagraadse Diploma in Projekbestuur Cum Laude  
Postgraduate Diploma in Project Management Cum Laude**

Bos, Sean William  
Hasheela, Mirjam Ndeulikweshi  
Kriel, Wouter Le Roux  
Vervalle, Jessica Annemarie

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

Beukes, Jean  
Bham, Suhail  
Botha, Julie  
Damon, Jean-Pierre  
De Castro, Jose D'Azevedo Pinto  
De Roubaix, Calvin  
Eigelaar, Jan-Louis  
Geldenhuis, Dean  
Hendricks, Shakeel  
Mapholi, Fhumulani Princess  
Mohammed, Luqman Al-Hakim  
Schuch, Hermann  
Steenkamp, Jacobus Durr  
Tlou, Thuli  
Van Huyssteen, Kyle Jason

**Nagraadse Diploma in Besigheidsbestuur en -administrasie  
Postgraduate Diploma in Business Management and Administration**

Ackermann, Estelle  
Appel, Ilse Nadine  
Arendse, Arlene  
Badenhorst, Rudi  
Basson, Renier  
Bester, Johannes Gideon

Bode, Werner Adolf  
Boshoff, Eliana  
Botes, Christopher  
De Kock, Martin Enslin  
Du Toit, Corina  
Dushimire, Jean-Pierre  
Gardiner, Derek Jonathan  
Gerber, Heinrich Daniel  
Gerber, Kobus Malan  
Hancke, Hendrikus  
Hartnick, Rushana  
He, Ming  
Hewitt, Timothy John  
Janse van Rensburg, Donovan  
Kambatuku, Mekupi  
Kula, Yoliswa Patricia  
Kustaa, Josephat Gerson  
Lepota, Tumelo  
Leverson, Tara Juliette Corinna  
Macheke, Mpho Thato  
Mahoya, Munyaradzi  
Maritz, Gerhardus  
Marx, George Frederik Stephanus  
McKechnie, Kevin-Paul  
Meyer, Anthon-Tobias Michael  
Meyer, Diane Joy  
Middleton, Lee-Roy  
Moolman, Jandre  
Morony, Clare Isobel  
Mutisya, Nthabiseng Marcia  
Nakambale, Selma Dhiginina  
Nakuumba, Linear Inekela  
Namuba, Kiviyo Francisca  
Nel, Christian Pascal  
Nels, Jamie-Lee Sheena  
Ngoma, Sisikelelwe  
Pattathil, Renil Georgenson  
Peters, Moegamat Fardiel  
Schade, Johannes Petrus  
Shiimbi, Lucia Evangeline Tyd  
Sigasana, Lungelwa Lucia  
Silwana, Thembisa Babalwa  
Stoffberg, Michael  
Stopka, Martin  
Strauss, Stephanus Christiaan  
Tom, Zimasa Yandisa  
Van Aarde, Michiel Nicolaas  
Van Deventer, Riaan Andre  
Van Niekerk, Gideon Machiel

**Nagraadse Diploma in Besigheidsbestuur en -administrasie  
Cum Laude**

**Postgraduate Diploma in Business Management and  
Administration Cum Laude**

Ambrose, Duane Clinton  
Beukes, Michelle Gene  
Bugwande, Ivana  
Cramer, Ina Simone

Laubscher, Adrian  
Lawson, Samantha Anne  
Potgieter, Andries Petrus  
Song, Chao  
Tshweneyame, Mpho Hilda  
Weichardt, Warrick

**Nagraadse Diploma in Toekomsstudie  
Postgraduate Diploma in Futures Studies**

Alli, Nazir  
Dhlamini, Zandile Prudence  
Mashimbye, Miyelani Ednah  
Ramakokovhu, Tshiphiri Jonathan

**Nagraadse Diploma in Ontwikkelingsfinansies  
Postgraduate Diploma in Development Finance**

Bopape, Gertrude Mokete  
Kalavadakken, Maagatha  
Katamelo, Urbane  
Kgosimeme, Thato Matlhogonolo  
Khanyile, Thandekile Sphindiwe  
Links, Mario Oscar  
Liphoto, Enoch Lerato  
Mangqalaza, Qaqambile  
Mangwengwende, Enson Muranganwa  
Mavengere, Tarirai  
Mncube, Zinhle  
Mokhathi, Thapelo  
Molosi, Pumela  
Mosetlhi, Tesca Priscilla Mmaposo  
Ndabeni, Inga Sxolile  
Nghifikua, Frans Tuyoleni  
Nkofo, Mankoko Khopotso Dvora  
Radebe, Lethabo Goitsione  
Rasikhinya, Khodani  
Segabutle, Keodiretse Ernest Basil  
Sikuni, Sakhele Sydney  
Skhosana, Mamosebetsi  
Soji, Samukelisiwe Zamancwango  
Tangayi, Vukile  
Tantij, Anna Seagela Sibongile  
Vimbani, Xolelwa Siyanda  
Wells, Dominique Carmen  
Zungu, Mthandeni

**Nagraadse Diploma in Ontwikkelingsfinansies Cum Laude  
Postgraduate Diploma in Development Finance Cum Laude**

Bhagwan, Shivangi

**Diploma in Openbare Verantwoordbaarheid  
Diploma in Public Accountability**

Mabuto, Skumbuzo Alan  
Petersen, Lizelle Nashley



3

3 April 2019

17:00

## Fakulteite

*Teologie*

*Ekonomiese en Bestuurswetenskappe*

*(slegs BRekLLB, BRek, HonsBRek en MRek)*

*Ingenieurswese*

## Faculties

*Theology*

*Economic and Management Sciences*

*(only BAccLLB, BAcc, BAccHons and MAcc)*

*Engineering*





# 3

## PROGRAM

- Staan asseblief*
- Staan asseblief*
- Sit asseblief*
1. Akademiese prosesie kom die saal binne.
  2. Sing van die Nasionale Lied (sien binnekant van die agterblad).
  3. Konstituering deur die Visekanselier.
  4. Verwelkoming deur die Visekanselier.
  5. Verwelkoming in Xhosa.
  6. Voorstelling van die eredoktorandus en toekenning van die eregraad deur die Visekanselier.
  7. Voorstelling van kandidate wat kwalifikasies ontvang deur die dekaan van die fakulteit en toekenning van kwalifikasies deur die Visekanselier.
  8. Sluiting deur die Visekanselier.
  9. Akademiese prosesie verlaat die verhoog.
- Staan asseblief*

## PROGRAMME

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

# EREGRAAD | HONORARY DEGREE

*Fakulteit Ingenieurswese*  
*Faculty of Engineering*

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

## SHIRLEY ANN JACKSON

**vir haar baanbrekersrol in die akademiese sfeer en haar toewyding aan die transformasie van die hoër onderwys; vir haar uitnemende bydraes tot die wetenskap, ingenieurswese en tegnologie; en vir haar leierskap wat die Universiteit Stellenbosch help vorm het as 'n universiteit in Afrika, vir die wêreld.**

Nadat Shirley Ann Jackson in 1964 as topstudent in haar klas gematrikuleer het, skryf sy in by die Massachusetts Instituut vir Tegnologie (MIT) – een van slegs 20 Afro-Amerikaanse studente daar, en die enigste wat teoretiese fisika studeer. Haar studieloopbaan by MIT loop uit op 'n PhD in kernfisika in 1973. Sy word die eerste Afro-Amerikaanse vrou wat 'n doktoraat in fisika in die Verenigde State verwerf, en is ook in dié opsig 'n pionier.

Jackson sit haar rol as baanbreker voort toe sy in 1999 die eerste vrou en Afro-Amerikaner word om die presidentsamp van die Rensselaer Politegniese Instituut te aanvaar. Haar visie was om Rensselaer in 'n tegnologiese navorsingsuniversiteit van wêreldgehalte te omskep – en dít het sy inderdaad gedoen.

Shirley Ann Jackson het uitnemende bydraes gelever tot die wetenskap, ingenieurswese en onderwys. Haar ervaring en steun as 18de president van die Rensselaer Politegniese Instituut het ook 'n kernrol gespeel in die ontstaan van die Universiteit Stellenbosch se HOOP Projek met sy wetenskap-vir-'n-beter-wêreld benadering, en die oortuiging dat wat by die US gebeur saak maak vir die wêreld.

Benewens 'n aantal poste as wetenskap-, tegnologie- en innovasieraadgewer vir staatsliggame, besorg haar kundigheid haar ook twee presidensiële aanstellings: voorsitter van die Verenigde State se Kernreguleringskommissie onder president Bill Clinton, en lid van president Barack Obama se Adviseursraad oor Wetenskap en Tegnologie.

**for her role as trailblazer in the academic sphere and her commitment to the transformation of higher education; for her outstanding contributions to science, engineering and technology; and for her leadership that helped shape Stellenbosch University into a university in Africa, for the world.**

After Shirley Ann Jackson completed her schooling in 1964 as valedictorian of her class, she enrolled at the Massachusetts Institute of Technology (MIT) – one of only 20 African-American students there, and the only one studying theoretical physics. Her study career at MIT culminated in a PhD in nuclear physics in 1973. As the first African-American woman ever to obtain a doctorate in physics in the United States, she again broke new ground.

In 1999, Jackson continued her role as trailblazer when she became the first woman and African-American to be elected as president of the Rensselaer Polytechnic Institute. Her vision was to transform Rensselaer into a world-class technological research university – a vision she has since achieved.

Shirley Ann Jackson has made outstanding contributions to science, engineering and education. Her experience and support as 18th president of the Rensselaer Polytechnic Institute in the United States also played a key part in the birth of Stellenbosch University's (SU) HOPE Project with its science-for-society approach, and in fostering the belief that what happens at SU matters to the world.

In addition to a number of positions as science, technology and innovation advisor to state bodies, her expertise also earned her two presidential appointments: chair of the United States Nuclear Regulatory Commission under President Bill Clinton, and member of President Barack Obama's Council of Advisors on Science and Technology.

## Doktor in die Wysbegeerte Doctor of Philosophy

**ALDOUS**, Benjamin James (Practical Theology)

*Towards an assessment of Fresh Expressions of Church in ACSA (The Anglican Church of Southern Africa) through an ethnographic study of the community supper at St Peter's Church in Mowbray, Cape Town*

Fresh Expressions of Church is a growing mission-shaped response to the decline of mainline churches in the West. Academic reflection on the Fresh Expressions movement in the UK and the global North has begun to flourish. No such reflection, of any scope, exists in the South African context. This ethnographic research asked whether the Fresh Expressions of Church movement is an appropriate response to decline and church-planting initiatives in the Anglican Church of Southern Africa. It also sought to ask what an authentic contextual Fresh Expression of Church might look like, and whether existing Fresh Expressions of Church are authentic responses to church planting in a postcolonial and post-apartheid terrain.

Supervisor: Prof IA Nell

**AMEVENKU**, Frederick Mawusi (New Testament)

*The reinterpretation of the law in Matthew's Sermon on the Mount: Exploring its contextual interpretation among the Ewes of Ghana*

Using socio-rhetorical interpretation to study the Sermon on the Mount (Matt 5–7), this study explored the contextual interpretation of the text among the Ghana-Ewe, and concluded that the Sermon on the Mount can be viewed as Jesus' new Kingdom Gospel and reinterpretation of the Mosaic law. The Sermon on the Mount teaches not just ethics, but also kingdom-appropriate righteousness for theological and ethical renewal. This righteousness is nurtured through daily beneficial exchanges with God, leading to habitual forgiveness and subsequent divine perfection of love for God and one's enemies. In the modern context, kingdom-appropriate righteousness challenges 'compulsory-wealth Christianity' promoted in Ghanaian Christianity today.

Supervisor: Prof J Punt

**BROWN**, Alease (Systematic Theology)

*The violence of Jesus and the justice of God: The life, death, resurrection, and Parousia of Jesus as exemplary of non-lethal violent resistance, and the implications for acts of protest by the subaltern*

This study examined the scriptural and historic grounds upon which Christian non-violence claims are based, and questioned whether there is a Christian warrant for support of acts of protest violence engaged in by black and marginalised persons. An honour/shame hermeneutic dispels 'non-violence' readings of scripture, and church history discloses the consistent church promotion of violence. Further, an expansive conceptualisation of violence unveiled the 'existential violence' of perennial black subjugation, which impairs the black will. Protest violence arises out of the repairing black will, as it pursues dignity. Apprehension of dignity (honour) over degradation (shame) is theologically consistent with Jesus' teaching.

Supervisor: Prof DA Forster

**DELPORT**, Khegan Marcel (Systematic Theology)

*On Tragedy and Transcendence: A Critical Exposition of Donald MacKinnon and Rowan Williams in the Context of a Modern Debate*

This study focused on the relation between Christian metaphysics and philosophies of the tragic, asking the question: Can a classical theological account of transcendence account for 'the tragic'? With this in mind, and within the context of a contemporary theological debate, the study offers a critical exploration of the work of the British theologians Donald MacKinnon and Rowan Williams as it relates to the notions of transcendence and tragedy. The study argues that Williams provides a corrective supplementation to MacKinnon by incorporating a deep sense of historicity and the tragic within a robust metaphysics that accounts for creativity, language and analogy.

Supervisor: Prof RR Vosloo

**HAVENGA**, Marthinus Johannes (Systematic Theology)

*Performing Christ: A South African protest play and the theological dramatic theory of Hans Urs von Balthasar*

This study provides a theological reading of the important protest play *Woza Albert!*, which was created and performed by the actor duo Percy Mtwa and Mbogeni Ngema in 1981, with the help and creative input of the renowned theatre maker and political activist Barney Simon. What made this piece of protest theatre so powerful and provocative was the fact that it retold the Christ narrative, as found in the Gospels, in the context of apartheid South Africa. This in-depth study was informed by a thorough engagement with the extensive and influential theological dramatic theory of the Swiss Catholic theologian Hans Urs von Balthasar.

Supervisor: Prof RR Vosloo

**OGIDI**, Joshua Dickson (Practical Theology)

*Teaching theological discernment: Youth ministry programme in ECWA Nigeria and contemporary hip-hop culture*

Theological discernment is the normative process of theological reflection, decision making, thinking and the judgement of right and wrong. This study investigated how a youth ministry programme equips its youths with the theological discernment to identify and engage with the challenges and opportunities within Nigerian hip-hop culture. A qualitative research methodology revealed that Nigerian youths can be equipped as social actors through theological models that are deliberate in focusing on the youth. This can practically be done through Bible studies, prayers, discipleship and mentorship; networking between youth ministry academics, practitioners, administrators and parents; and employing reception history theory, enculturation, acculturation and the foundation of a hip-hop church.

Supervisor: Dr SM Weber

**ROUX, Lee-Anne (Practical Theology)**

***On becoming whole in 'Pentecostal spirituality': The quest for an integrative approach to pastoral caregiving and healing***

*This study investigated whether Pentecostal spirituality is contributing to or is a hindrance to healing and wholeness in pastoral caregiving. It was found that healing encompasses much more than just physical healing and extends to various other existential dimensions of the human life (cura vitae). Healing cannot be restricted to an explanatory model and causative approach, merely connecting evil and suffering to the notion of 'God the afflicter'. A reduced anthropology (human sinfulness) or the simplistic notion that failure of healing is the result of inadequate faith or unbelief is hermeneutically unacceptable. Healing rather resides in the quality of human relationships.*

**Supervisor: Prof DJ Louw**

**SCHIMKE, Kurt Gustav Peter (Ecclesiology)**

***The character of the purse: Analyzing tax records and administrative policy from the perspective of Christology in 7th-8th century Egypt***

*Did historical-contextual Christological perspectives in seventh- and eighth-century Egypt have a direct impact on the economic and political relationship with Arabs, specifically as it relates to taxes, and if so, how and to what extent? This was a study of historiographical and papyri evidence that answered this question via ecclesiastical discourse involved with the economic (tax) policy of Arab rule from 641 to ~720 with the aim of making a connection between theology and practice. It is found that the majority of Miaphysite Christology did not have a world and life view that provided an ethic for self-defence in direct opposition to the State.*

**Supervisor: Prof R Müller**

**SMUTS, Ricardo (New Testament)**

***Jesus and the Samaritan woman (John 4:1–42): A paradigmatic encounter for discipleship (μαθητής) and witness (μαρτυρία)***

*In intense and complex dialogues in the Gospel according to John, Jesus is portrayed in conversation with diverse people. The encounter with the stigmatised Samaritan woman introduces the paradigmatic reader to the truth about Jesus. Through the narrative and its appropriation, and as inquisitiveness moves to marvel, the focus of the woman's life moves from debatable eros to that of discipleship and witness in the manner she engages her townspeople. Confirming her allure as character in the gospel, she is presented as a model of and for a transformative encounter with Jesus and leads the paradigmatic reader to significant insights into the dynamics of the Fourth Gospel's discipleship and witness.*

**Supervisor: Prof J Punt**

**ULLRICH, Calvin Dieter (Systematic Theology)**

***Sovereignty and the event in John D. Caputo's radical theology***

*The notion of sovereignty is a fundamental idea informing democratic societies. Due to the 'political theology' of the influential German theorist Carl Schmitt, the claim is often made that sovereignty derives its meaning both historically and theologically from the idea of a 'sovereign God'. This study explored the implications and possibilities of thinking about God without sovereignty through and engagement with the contributions of the American philosopher of religion John D. Caputo, who formulated a 'theology of event'. The study proposes that the discourse of theo-poetics provides the resources for a radical political theology that can imagine God without sovereignty.*

**Supervisor: Prof RR Vosloo**

## Doktor in die Wysbegeerte Doctor of Philosophy

**BOOYSEN**, Gerrie Jacobus (Industrial Engineering)

*Developing a certification framework to manufacture patient-specific implants using selective laser melting*

Additive manufacturing is widely described as a disruptive technology with many advantages, such as mass customisation and less material wastage. The aim of this study was to develop a certification framework focusing on Ti64 titanium powder (as the material) and selective laser melting (as the process) for patient-specific implant manufacturing. A total of 68 process risks were identified and mitigated through developing 19 procedures, 34 standard operating procedures, five supportive protocols, three machine and five process validations. Through this framework development, the risk index was significantly lowered with more than 20 successful implants designed and manufactured during the study.

*Supervisor:* Prof AF van der Merwe

*Co-supervisor:* Prof DJ de Beer

**BROWN**, Logan Jeremy (Chemical Engineering)

*Conversion of paper recycling residues into valuable fuel products via fermentation and pyrolysis*

Paper mill waste containing fibre and plastic was investigated for the production of energy products. The conversion of three different waste streams produced at a paper mill making use of recycled materials was studied by pyrolysis, where char and oil products with a calorific value of up to 32 MJ/kg and 40 MJ/kg similar to subbituminous coal and heavy fuel oil were produced. The techno-economic analysis revealed that in order for a pyrolysis processing route as an alternative to disposal at landfill sites to be economically viable, a centralised processing facility that utilises waste from neighbouring paper mills will be required.

*Supervisor:* Prof JF Görgens

**COETZEE**, Gerhardt (Chemical Engineering)

*Optimization of *Aspergillus fijiensis*  $\beta$ -fructofuranosidase and production using *Pichia pastoris* for the production of fructooligosaccharides from sucrose*

A native and an engineered  $\beta$ -fructofuranosidase enzyme from *Aspergillus fijiensis* were optimised for heterologous expression in a yeast host, *Pichia pastoris*, by comparing two *P. pastoris* strains (X-33 and DSMZ 70382), two promoters (AOX1 and GAP) and two codon optimisation techniques (ATUM and Geneart®). The production of prebiotic short-chain fructooligosaccharides was optimised by minimising the temperature and enzyme dosage required to produce a targeted short-chain fructooligosaccharide composition similar to a leading commercial prebiotic product, Actilight®. The enzymes were further evaluated for their ability to produce the short-chain fructooligosaccharide from low-cost industrial sugar substrates, A-molasses and refinery molasses.

*Supervisor:* Prof JF Görgens

**DELPORT**, Johannes Arnoldus Delpont (Electronic Engineering)

*Simulation and verification software for superconducting electronic circuits*

Superconducting electronics appear viable for future computing technology, but the absence of electronic design automation software slows circuit development. An analogue circuit simulation engine, JoSIM, was developed for the simulation of superconducting circuits in order to verify and optimise operational margins. JoSIM employs the modified nodal analysis method. In addition to a standard voltage-based solution, JoSIM supports complete Josephson phase-based simulation that allows the direct application of direct-current sources that include static magnetic fields to a circuit with zero resistance. JoSIM also incorporates a powerful mathematical expression parser and an integrated graphical user interface result-plotting window.

*Supervisor:* Prof CJ Fourie

**DENYS**, Frank Joris Maria (Civil Engineering)

*Investigation into flow-induced vibrations of piano key weirs*

The unsteady interaction between the structural and hydraulic behaviour of piano key weirs was investigated in this study. The thin-walled nature of these novel hydraulic structures is advantageous from a hydraulic perspective, but potentially weakens the structure from a vibration perspective. The structure has relatively low natural frequencies, which could coincide with the frequencies of the pressure excitations that are generated by the unique flow dynamics around the structure. Such resonance could lead to material fatigue. Although it was found that fluid-induced vibrations do occur, they are of limited amplitude and are therefore unlikely to lead to fatigue-related problems.

*Supervisor:* Prof GR Basson

*Co-supervisor:* Dr JAvB Strasheim

**DU PLESSIS**, Jacobus Lodewikus (Civil Engineering)

*Modelling outdoor water use of homes in gated communities*

Gated communities are commonly referred to as residential estates or common-interest housing developments with homes. Accurate estimation of outdoor water use is essential from a planning perspective, especially with water restrictions typically targeting outdoor water use. A mathematical outdoor water use model for gated communities was defined from components including garden irrigation and pool water use. Model parameters were stochastically populated to achieve parameter distributions used to simulate outdoor water use of gated communities with Monte Carlo methods. Simulated model results were verified in relation to outdoor water use data derived from wastewater flow and indoor water use.

*Supervisor:* Prof HE Jacobs

**FADIJI, Tobi Samuel (Mechanical Engineering)*****Numerical and experimental performance evaluation of ventilated packages***

Packaging serves a crucial role in reducing postharvest losses by protecting fresh produce during handling. This study provides insight into the structural performance of ventilated cartons to enhance the development of improved designs. Finite element models capable of accurately predicting the strength of cartons were developed and experimentally validated. The results showed that the performance of cartons was sensitive to the vent hole configuration and environmental conditions. Increasing the vent area and humidity and lowering the temperature increased the creep rate. This study provides empirical and numerical evidence of the efficacy of different carton designs and guidelines for improving next-generation packaging.

*Supervisor:* Prof C Coetzee

*Co-supervisor:* Prof UL Opara

**HAWKRIDGE, Gregory Thomas (Mechatronic Engineering)*****Standby redundant control using Erlang/OTP and JADE for a manufacturing cell***

Due to their increasing complexity, the reliability of modern manufacturing systems is a concern. Holonic systems show promise for managing this complexity, but may contain holons that represent single points of failure. The availability of these holons can be improved through standby redundancy. This study developed a novel approach for implementing standby redundancy using the Erlang/OTP software platform and evaluated it through a case study comparison with the JADE multi-agent system framework. Using Erlang/OTP, the combination of standby redundancy and holonic control has the potential to improve controller availability for the complex distributed systems envisioned by Industry 4.0 and IIoT.

*Supervisor:* Prof AH Basson

*Co-supervisor:* Dr K Kruger

**IMMINK, Harmke (Industrial Engineering)*****Greenhouse gas forecasting and target setting using an ex-post analysis***

Collective action is needed to deal with climate change. Countries made commitments under the Paris Agreement, while cities and companies are increasingly requested to voluntarily set greenhouse gas (GHG) targets. An analytical technique was developed to present a GHG inventory together with the GHG mitigation actions to construct a counterfactual baseline. This counterfactual baseline is compared to the GHG target in one infographic. This analytical technique was applied in three contextual situations: at national level, for a city and for a company. With this technique, progress can be tracked in a data-poor environment, while keeping the focus on mitigation action.

*Supervisor:* Prof AC Brent

*Co-supervisor:* Prof SS Grobbelaar

**KELLERMANN, Thomas Johannes (Industrial Engineering)*****Model-based decision support for subjective preference blending***

In this study a decision support framework for facilitating the iterative solution of subjective preference blending problems was designed. The framework estimates a decision maker's value function while reducing the workload required by the decision maker in terms of pairwise comparisons of alternatives. The framework is also capable of accommodating various levels of decision-maker inconsistency. The key features of the framework are the pursuit of a trade-off between exploiting well-performing areas of the decision space and exploring unknown regions of the decision space, and the adoption of a reinforcement learning process iterating between a computer and decision maker.

*Supervisor:* Prof JH van Vuuren

**KLOPPER, Brandt (Electronic Engineering)*****Antenna elements for sparse-regular aperture arrays***

This study developed modelling and design strategies for sparse-regular antenna array elements. The sparse regular array regime may allow for significantly simplified processing, and lower cost implementation, of fully digital beam formers in imaging interferometers, such as the SKA radio telescope. Unfortunately, these antennas present some significant design difficulty, as the sensitivity of the system varies quickly, and non-linearly, as a function of frequency and scan angle. Using a combination of physical insight into the mechanism causing these rapid variations as well as modern mathematical modelling techniques, a strategy was developed to reliably characterise these antennas over their full operating domain.

*Supervisor:* Prof DIL de Villiers

**LE ROUX, Solomon Petrus (Electronic Engineering)*****Real-time behaviour classification techniques in low-power animal-borne sensor applications***

Knowing the current behaviour of an animal can allow early warning of threats such as stock theft and poaching. In this study, an animal-borne automatic behaviour classification system was developed to provide such information in real time. Energy-aware features and model selection based on the explicit joint optimisation of both classification accuracy and energy expenditure allow power requirements to be minimised while maintaining near-optimal classification accuracy. By performing classification directly on the animal, the system can transmit real-time behavioural updates and has potential applications in agriculture, the conservation of endangered wildlife and long-term ecological studies.

*Supervisor:* Prof TR Niesler

**LERATO, Lerato (Electronic Engineering)***Large-scale clustering of acoustic segments for sub-word acoustic modelling*

Automatic speech recognition systems require words to be defined in terms of sound units such as phonemes. For most of the world's languages, however, phonemes have not yet been formalised by linguistic study, thereby precluding speech technology. This work presents a clustering procedure that automatically discovers phoneme-like sub-word acoustic units for use in speech recognition systems. The explosion in the number of acoustic similarity comparisons associated with established methods was addressed by parallelisation and iteration, taking advantage of multiprocessor architectures. This not only makes the clustering of large datasets feasible, but also surpasses the performance of existing methods.

*Supervisor:* Prof TR Niesler

**LINDNER, Brian Siegfried (Extractive Metallurgical Engineering)***Improving the performance of causality analysis techniques for automated fault diagnosis in mineral processing plants*

Modern mineral processing companies are driven towards improving productivity by leveraging existing processes optimally. This can be achieved by improving diagnosis of faults that degrade process performance to provide actionable information to process engineers. Causality analysis can infer causal connections between measured variables and trace faults along their propagation paths. This study developed improvements to existing causality analysis techniques to make them more accessible to practitioners in the mineral processing industry. These improvements were developed and tested using a combination of simulated case studies and real-world case studies of operational faults occurring in a mineral processing plant.

*Supervisor:* Dr L Auret

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

**MCLEOD, Christina Helen (Civil Engineering)***Model uncertainty in the prediction of crack widths in reinforced concrete structures and reliability implications*

The prediction of crack widths in reinforced concrete structures is subject to high uncertainty. This study statistically quantified this uncertainty through comparison of model predictions with experimentally observed values for a number of prediction models and load situations. This allowed reliability assessment of the design provisions of several leading standards used for the design of liquid retaining structures. The currently used British Standard formulation falls short of target reliability levels, while the fib Model Code formulation exceeds the targets.

*Supervisor:* Prof C Viljoen

**MOKOMELE, Thapelo (Chemical Engineering)***Integrated bioenergy and animal feed production from AFEX™ and steam-exploded sugarcane residues*

Current and future trends demonstrate that the increasing world population, changing human diets and increased demand for (bio) energy present an opportunity to integrate the energy and animal feed supply chains to meet the future food, feed and bioenergy demands. This study evaluated the potential use of two commercially relevant pretreatment technologies, ammonia fibre expansion (AFEX™) and steam explosion (StEx), to valorise sugarcane residues to produce enhanced animal feeds and bioenergy. The results demonstrated that both technologies could facilitate several integrated bioenergy-food-waste management scenarios, providing alternative avenues for maximising waste utilisation and minimising the human footprint on the environment.

*Supervisor:* Prof JF Görgens

**MUGWAGWA, Lameck (Industrial Engineering)***Investigation and management of residual stresses in selective laser melting*

The study focused on the management of residual stresses in selective laser melting (SLM). New scanning sequences were developed, leading to a 40% reduction in residual stresses. A process window was also devised for SLM of maraging steel 300, a hot work tool steel. The process window illustrates the porosity and residual stress state associated with different combinations of laser power and scanning speed. A process map, driven by laser power, scanning speed and layer thickness, was established and validated, contributing to significant reduction of residual stresses and the accompanying distortions without negatively affecting the achievable part density.

*Supervisor:* Prof D Dimitrov

*Co-supervisors:* Prof S Matope, Prof I Yadroitsau (external)

**NARON, David Rangnaan (Chemical Engineering)***Catalytic pyrolysis conversion of lignin from different sources to phenols*

Lignin, a by-product of the paper and pulp industry and the emerging cellulosic ethanol processes, is considered a source of energy. However, the aromatic phenolic nature of lignin makes it a valuable renewable resource for the sustainable production of chemical products. In this study, a novel analytical pyrolysis method, combining thermogravimetric analysis, thermal desorption and gas chromatography coupled to mass spectrometry, was developed and used for the first time to quantify monomeric phenolic compounds by internal calibration. With the aid of impregnated catalysts, the yields of some phenolic compounds with viable market values were significantly increased.

*Supervisor:* Prof JF Görgens

*Co-supervisor:* Dr L Tyhoda

**NIEDER-HEITMANN, Mieke (Chemical Engineering)**

*Techno-economic and lifecycle analyses for comparison of biorefinery scenarios for the production of succinic acid, itaconic acid and polyhydroxybutyrate (PHB) from sugarcane lignocelluloses*

Approximately one million people depend on the sugar industry for their livelihood. However, this industry is faced with financial challenges. This study investigated whether the valorisation of sugarcane lignocelluloses in a biorefinery is a suitable and viable investment option to revive the sugar industry. Various biorefinery scenarios for the coproduction of itaconic acid, succinic acid, polyhydroxybutyrate (PHB) and electricity were investigated. The coproduction of succinic acid, PHB and electricity in a multiproduct plant, annexed to an existing sugar mill and new combined heat and power plant, resulted in the most sustainable scenario with an Internal Rate of Return of 24.1%.

*Supervisor:* Prof JF Görgens

**OKONKWO, Patrick Nwabueze (Civil Engineering)**

*Health and safety management and safety performance among construction contractors in South Africa*

The failure of health and safety management systems and the lack of safety culture within contractor organisations have been highlighted as factors responsible for the high rate of construction accidents in developing countries, including South Africa. Few studies have investigated health and safety management within the construction industry from the organisational/enterprise perspective. This study identified and compared the effectiveness of the different health and safety management arrangements employed by construction contractors in South Africa. It made conclusions and recommendations that have significant implications for the current approach to health and safety management within the construction industry in South Africa.

*Supervisor:* Prof JA Wium

**PITOT DE LA BEAUJARDIERE, Jean-Francois Philippe (Mechanical Engineering)**

*Performance modelling of an open volumetric receiver CSP plant incorporating rock bed thermal storage*

Open volumetric receiver (OVR) concentrating solar power (CSP) plants employ air as a heat transfer fluid, potentially enabling higher power cycle operating temperatures, higher solar electric efficiencies and reduced electricity generation costs. Importantly, they are also able to utilise inexpensive rock to store thermal energy. In this study, computational tools were developed to enable the design and performance modelling of OVR CSP plants incorporating rock bed thermal energy storage. These tools were ultimately applied to evaluate, for the first time, the performance and operating characteristics of such a plant when employed for peak power generation.

*Supervisor:* Prof HC Reuter

*Co-supervisor:* Prof TW von Backström

**RUDMAN, Chantal Eloise (Civil Engineering)**

*Aspects of self-cementation of recycled concrete aggregate when applied in roads*

Growing volumes of traffic have led to expanding road infrastructure, resulting in undesirable depletion of natural resources. Recycled concrete aggregate, processed from builders' rubble, is an alternative material that can be used in road layer works. However, the material has self-cementation properties that can be beneficial or detrimental to material performance, and its unique engineering properties must be understood. The study analysed the fundamental performance parameters and developed novel methods to characterise the material. It was concluded that self-cementation as a scientific phenomenon is advantageous, but that appropriate statistical methods should be applied to ensure reliable performance.

*Supervisor:* Prof KJ Jenkins

**SILAVWE, Davy Danny (Civil Engineering)**

*Modelling breakthrough curves and investigating the impact of model and numerical properties on parameter estimation*

An investigation into numerical methods of the advection-dispersion model used to develop empirical models for predicting longitudinal dispersion coefficients for conservative stream solute pollutant transport was performed. It was found that computed dispersion coefficients varied with numerical method and numerical properties used. Furthermore, it was found that the structure and performance of empirical models also depended on the numerical method used and on numerical properties. Further evaluation of empirical models, by quantitative performance measures, showed that their application to conservative stream solute modelling may be supported within calibrated conditions and methods used.

*Supervisor:* Dr IC Brink

**VENTER, Karien (Civil Engineering)**

*South African novice drivers: Exploring hazard perception development during the learner driver training phase*

Novice drivers worldwide have an increased risk of being in a fatal crash. This naturalistic driving study followed the hazard perception development process of 26 South African learner drivers. The study considered changes in gaze behaviour to assess the manner and extent to which situational awareness improves during the learner driver phase. The results show that although learners demonstrated some improvement in situational awareness and hazard perception, not enough focus was placed on hazard perception as part of the K53 learner driver programme. As such, newly licenced drivers in South Africa are not adequately trained in these areas.

*Supervisor:* Prof M Sinclair



## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

### *Fakulteit Teologie | Faculty of Theology*

#### **Magister in die Teologie Master of Theology**

David, Teresa Chateia (New Testament)  
Jung, Kwang-Jin (New Testament)  
Kamanga, Chispine Nthezemu (Practical Theology)  
Kim, Hoseok (Systematic Theology)  
Maarman, Christopher Jacques (Practical Theology: Ministry)  
Matthee, Catharina Antoinette (Practical Theology)  
Monoametsi, Kamogelo Eric (Practical Theology: Ministry)  
Mudzanire, Suspicion (Missiology)  
Nissen, Christopher Zandro (Practical Theology)  
Pedro, Stephen (Practical Theology: Ministry)  
Pondani, Simbarashe (Practical Theology)  
Sewapa, Tebogo Molate Lister (Systematic Theology)  
Son, Kido (New Testament)  
Stanley, John (Systematic Theology)  
Treurnicht, Schalk (Old Testament)  
Vhembo, Webster (Practical Theology)

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

Malherbe, Philippus Bernardus (Practical Theology: Ministry)  
Pienaar, Pascal (Church History and Church Polity)  
Van Niekerk, Ross (Practical Theology: Ministry)

#### **Magister Divinitatis Master of Divinity**

De Villiers, Armandt (Ministry)  
Majiedt, John Hendry (Ministry)  
Mountain, Thanduxolo (Ministry)  
Visser, Jakobus Johannes (Ministry)

#### **Magister Divinitatis Cum Laude Master of Divinity Cum Laude**

Meyns, Friederike (Ministry)

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

Apollis, Quinton Basil  
Bobai, Zwandien  
Gouws, John Andrew  
Julie, Juvan  
Manuel, Ashwin Sherman  
Saayman, Liesl

#### **Baccalaureus in die Teologie Bachelor of Theology**

Adonis, Rochaen-Dee  
Kraak, Sheldon Joshua  
Ludonga, Zimkhitha  
Mbelu, Mfanelo Thomas  
Niemand, Romano  
Nkabinde, Simphiwe  
Pieterson, Marcelino  
Pillay, Chamay  
Smit, Jonte  
Terblanche, Zahn-Mari  
Zungu, Sifiso Kenneth

#### **Baccalaureus Divinitatis Bachelor of Divinity**

Ferreira, Hermiene  
Gouws, Johannes Stephanus  
Groenewald, Hanli  
Hutton, Lionel Harold  
Maeka, Motlatsi Johannes  
None, Zolani

## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

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

### **Magister in Rekeningkunde Cum Laude** **Master of Accounting Cum Laude**

Mey, Mattheus Theodorus

### **Honneurs-Baccalaureus in Rekeningkunde** **Bachelor of Accounting Honours**

Alberts, Amber-Lain  
Bekker, Mauritz Briers  
Breunissen, Stephan Burger  
Briedenhann, Christine Magdalene  
Carelse, Candice Lavern  
Clarke, David John  
Coetzee, Bernalé Elzane  
Crawford, Tannen James  
Cuyler, Willem Jacobus  
Dalwai, Riyaad  
De Castro, Lauren Ashely  
Donn, Micaela  
Du Toit, Francois Jacobus  
Du Toit, Sume  
Erasmus, Louis Willem Rasmus  
Fourie, Christopher Herman  
Fourie, Natalie  
Giamouridis, Efstratios  
Glanvill, Brad Hugh  
Goble, Jessica Leigh  
Guiney, Neil Millar  
Holme, Matthew Eduardo  
Huijnen, Nicholas Carl  
Izaks, Conray Marcus  
Janse van Rensburg, Marelise  
Joubert, Liezl  
Karstadt, Kurt Mark  
Keyser, Alex  
Lambert, James Brett  
Livingstone-Louw, Jacqui Mari  
Maritz, Frans Albertus  
Mason, Luke Lee  
Mc Diarmid, Brendon Donald  
Meyer, Jaydi-Leigh  
Mockler, Siobhan Helen  
Moodien, Vernleigh  
Motsi, Nyasha  
Ndlovu, Nhlalenhle Nontuthuzelo  
Passmore, Antonio Henry  
Reed, Horatio Antonio Lee  
Reyneke, Danielle  
Roodt, Alexander  
Roth, Isabelle  
Rothmann, Tokkie Kasselmann  
Salie, Moegammad Redah  
Scheffer, Bianca  
Scott-Moncrieff, Shannon Deanne  
Sieberhagen, John-George

Smith, Brandon-Lee  
Spamer, Leané  
Stander, Sean Paul  
Strauss, Stefan  
Strydom, Brenden Coen  
Tregoning, Kylie Claire Joan  
Tshepe, Keabetswe  
Van der Merwe, Alwyn Johannes Tertius  
Van der Merwe, Amy-Lee  
Van der Merwe, Chantelle  
Van Niekerk, Corika  
Van Zyl, Mika  
Vermeulen, Liezel-René  
Wilson, Brandon  
Winship, William Bruce  
Zenha, Miguel Antonio

### **Baccalaureus in Rekeningkunde en Baccalaureus in die** **Regsgeleerdheid** **Bachelor of Accounting and Bachelor of Laws**

Barnard, Zandré  
Bosman, Mia  
Botha, Bernard Cornelius  
Gobel, Chante  
Greyvensteyn, Liane  
Kamoetie, Diwan Morné  
Maritz, Runé  
Nell, Warne Bouwer

### **Baccalaureus in Rekeningkunde en Baccalaureus in die** **Regsgeleerdheid Cum Laude** **Bachelor of Accounting and Bachelor of Laws Cum Laude**

Meyer, Megan

### **Baccalaureus in Rekeningkunde** **Bachelor of Accounting**

Abel, Jacobus Nicolaas Coetzee  
Abrahall, Kristin Nicole  
Adonis, Jurie Louw  
Ahmed, Abshira Ali  
Alexander, Courtney Tarynne  
Baard, Janke  
Banda, Edson Chikondi  
Bardien, Aamina  
Barnard, Elze  
Barnard, Jeandri  
Basson, Jacques Pierre  
Bellingan, Ruan  
Bergman, Christine  
Blore, Geoffrey Michael  
Boshoff, Elmi Louise  
Botes, Marlene  
Botes, Michaela René  
Bowmaker-Falconer, George

Bowman, Bradley Brian  
Boyes, Duncan Mitchel  
Brand, Jacobus Johannes  
Broad, Jessica Anne  
Brown, Nicole Elesia  
Brownlee, Christopher James  
Bullock, John William  
Burger, Eleen  
Burger, Robin Earl  
Byrne, Nicola Myra  
Cameron, Claire Louise  
Campbell, Linique Cleo  
Carstens, Kyle Edwin  
Casey, Zintara  
Ceronio, Dante  
Claassen, André Jacobus  
Coetzee, Boris  
Coetzee, Isaac Jacobus  
Coetzee, Lize  
Corfe, Jordan Edward  
Cronje, Linda Karen  
Daniels, Micayla  
Davenport, Stanley Bennett  
De Clercq, Emma Louise  
De Jongh, Jeani  
De Jongh, Natasha Belushka  
De la Bat, Ritzema Jacques  
De Wet, Elsje  
Dedekind, Karl-Heinz  
Dickie, Alexander Andrew Speirs  
Dippenaar, Lene  
Dirkse, Dale Ralph  
Dlamini, Namelani Sphesihle  
Dodds, David Michael  
Du Plessis, Danel  
Du Plessis, Stephanus  
Du Toit, Charl Francois  
Duvenage, Markus  
Ephraim, Courtney Laycon  
Esterhuizen, Franco  
Esterhuuse, Anja  
Ferreira, Tatiana  
Fick, Dominic Sebastian  
Figeland, Worren  
Fihlani, Sinobomi  
Firth, Gene  
Fleming, Holly Frances  
Fogharty, Michaela  
Fourie, Ilse  
Fourie, Sunel  
Francke, Bradley James  
Gardiner, Genevieve  
Gcebe, Moeletsi  
Genders, Jonathan Timothy  
Gerryts, Zoë  
Gifford, Marc Robert  
Glover, Brandon Dale

Göbel, Rurik  
Gouws, Pieter Johannes  
Govender, Leelan  
Govender, Reedamai  
Graves, Kirsten Samantha  
Green, Sarah Joy  
Greyling, Heinrich Jacobus  
Grobbelaar, Robin  
Groenewald, CP Van Zyl  
Gudman, David James  
Guerrini, Daniela Francesca  
Harvey, Matthew Bryce  
Herselman, Reinhard  
Heuvel, Carin Lisa  
Heyns, Nadine  
Hibbert, Kyle Thirkell  
Hoffman, Mieke  
Honing, Adrian  
Horn, Kristi  
Ismail, Qiyaam  
Jacobs, Christiaan  
Janse van Rensburg, Nicola  
Japhta, Kirstin Allerson  
Johnson, Ryan Thomas  
Jordaan, Henning  
Kabane, Mahle  
Karam, Luke  
Keil, Stefan Johannes  
Kock, Samantha Loretta  
Koegelenberg, Lené  
Kok, Lydia  
Kriel, Nicole  
Kruger, Karmien  
Kunene, Nomalungelo  
Laing, Schalk-Willem  
Langenhoven, Gerrit Stephan  
Le Roux, Corne  
Le Roux, Gabriel  
Letshelea, Refiloe  
Liebenberg, Clara  
Linde, Johannes Jacobus  
Lingenfelder, Abraham Stephanus  
Loedolff, Chantel  
Lombard, Christoffel Benjamin  
Loots, Lieb Johannes  
Loubser, Pieter Eduard  
Lourens, Reece  
Madondo, Nontuthuko Uyanda Zevile  
Marais, Charl Johannes  
Marais, Pieter Schalk  
Maré, Marius Ignatius  
Martin, Damian Roy  
Maskell, Wayne  
Matebeni, Mabandla  
Meaker, Roy Jordan  
Mijburgh, Elsa  
Militz, Caitlin Rose

Mitchell, Olivia Penelope  
Modise, Nicole Ditebogo  
Mostert, Leila  
Motaung, Karabo  
Mthambo, Queenith  
Ndleleni, Luyolo Lusanda  
Neethling, Johannes Sarel  
Neilon, Sabrina  
Nel, Anneli  
Nel, Willem Andreas  
Ngwane, Augustine Precious Nonhlanhla  
Nieuwoudt, Andro Isak  
Nodada, Londiwe Siyamthanda  
North, Andrew Richard Craig  
Ntuli, Sthandiwe  
Nyabereka, Natasha Paidamoyo  
Oberholzer, Leandri  
Odendaal, Heinrich  
Odendal, Meaka  
Parson, Errowayne Jean Jaques  
Peffer, Zoey  
Penaluna, Nicholas Mark  
Pesch, Anja  
Peters, Sabine Helga  
Petersen, Brandon Malachi  
Petersen, Inge Vivian  
Petersen, Tamerin  
Pieters, Sebastian Roux  
Plant, Ryan John  
Pretorius, Marco  
Punt, Ludwig Christiaan  
Rabe, Hilde  
Radbone, Abigail  
Ramsing, Shriya  
Rencken, Keean Lee  
Roman, Matthew Daniel  
Roos, Christiaan  
Rossler, Thierry Christian  
Rossouw, Jean Daniel  
Roux, Ritka  
Runge, Alexander Roland  
Sadie, Kristo  
Sassin, Chané  
Schmulian, Lara Olivia  
Schoeman, Lisa  
Scholtz, Leandri  
Sibbald, Geoffrey Ronald  
Siemens, Anja  
Singh, Bianca  
Sishi, Sibahle  
Sloane, Lise Sarah  
Spanjaard, Andrew Robert  
Steyn, Jandre  
Stobbert, Rowan Anthony  
Stofberg, Stefan Nico  
Strauss, Gerhard Stephan  
Strauss, Marlene Elizabeth

Swanepoel, Anton  
Swanepoel, Petrus Francois  
Swart, Jared Nickolas  
Ter Borg, Gitte  
Theron, Charl Christiaan  
Theron, Pierre Joubert  
Tyawa, Ntandoyenkosi Thokozani  
Urry, Austen Bradshaw  
Valentine, Haleigh Victoria  
Van de Vyver, Robyn  
Van den Berg, Simeon  
Van der Merwe, Megan  
Van der Merwe, Nicholas  
Van Deventer, Raymond Jannique  
Van Heerden, Francois  
Van Niekerk, Wiehan  
Van Wyk, Johannes Lambert  
Varley, Constantine Godfrey  
Venter, Cara  
Venter, Heinz Hermann  
Venter, Zahn  
Verster, Max Harry  
Viljoen, Amber  
Viljoen, Shene  
Visser, Naude Bremer  
Vorster, Jeandre Butler  
Wiese, Adrian  
Williams, Ilhaam  
Wybrow, Dean

**Baccalaureus in Rekeningkunde Cum Laude**  
**Bachelor of Accounting Cum Laude**

Bosman, Laura Helen  
Hulme, Altenstaedt  
Wiese, Jacob Abraham

## ANDER KWALIFIKASIES | OTHER QUALIFICATIONS

### *Fakulteit Ingenieurswese | Faculty of Engineering*

#### **Magister in die Ingenieurswese Master of Engineering**

Addo, Prince (Extractive Metallurgical Engineering)  
Agar, Stephen John (Civil Engineering)  
Amunjela, Abimelek Shikongo (Industrial Engineering)  
Appolus, Michael (Civil Engineering)  
Basson, Elias Johannes Jacobus (Mechanical Engineering)  
Becker, Jolanda (Industrial Engineering)  
Bester, Maretha (Mechatronic Engineering)  
Bindeman, Marco (Mechanical Engineering)  
Blignaut, Johan (Civil Engineering)  
Bonsma, Inance Mada (Mechanical Engineering)  
Botete, Makoena Raymond (Mechanical Engineering)  
Brink, Andre Daniel (Mechanical Engineering)  
Britz, Juan Joseph (Electrical Engineering)  
Burger, Jarryd Michiel (Mechatronic Engineering)  
Cerfonteyn, William Jacques (Electronic Engineering)  
Chisi, Tatenda Farai Thandiwe (Engineering Management)  
Cloete, Pierre Lourens (Civil Engineering)  
Coetzee, Stef (Electrical Engineering)  
Craeye, Cian Alexander (Mechatronic Engineering)  
Cronje, Barend Jacobus (Industrial Engineering)  
De Jager, Tremayne Maré (Civil Engineering)  
De Jongh, Willem Carel (Electronic Engineering)  
Dednam, Desire (Civil Engineering)  
Diekmann, Michael Andreas (Civil Engineering)  
Du Plessis, Johannes Andreas (Industrial Engineering)  
Durand, Thomas Gerhardus (Electronic Engineering)  
Erasmus, Stephanus Johannes (Mechanical Engineering)  
Farmer, Warren James (Electrical Engineering)  
Fourie, Dylan Michael (Mechanical Engineering)  
Frohmann, Philipp (Mechatronic Engineering)  
Froneman, Tayla (Mechatronic Engineering)  
Gadinger, Hans-Jurgen (Electronic Engineering)  
Geel, Andrew Frederick (Civil Engineering)  
Greger, Marius Michael (Industrial Engineering)  
Grobelaar, Dewald (Mechanical Engineering)  
Groenewald, Jomaré (Chemical Engineering)  
Haller, Michen Christian (Mechatronic Engineering)  
Henning, Mieke (Engineering Management)  
Jele, Mphikeleli Esau (Civil Engineering)  
Johannes, Emile (Chemical Engineering)  
Johnston, Michael Alan (Electronic Engineering)  
Joubert, Hein (Mechanical Engineering)  
Kanhukamwe, Faith Nyaradzo (Mechanical Engineering)  
Kell, Carissa Jordan Kayla (Chemical Engineering)  
Koegelenberg, Dirk Johan (Mechanical Engineering)  
Labuschagne, Peter (Mechatronic Engineering)  
Lampsey, Irene Naa Odarley (Chemical Engineering)  
Le Roux-Arnies, Amory Venite (Civil Engineering)  
Lloyd, Alexander Michael (Electronic Engineering)  
Lungu, Kelvin Agabu (Civil Engineering)  
Maapola, Tshepisho Thabiso Praise (Chemical Engineering)  
Madufor, Ndubuisi Johnkennedy (Electronic Engineering)  
Magagula, Mondli (Civil Engineering)  
Malan, Maria Magdalena (Mechanical Engineering)  
Marincowitz, Fredrik Simon (Mechanical Engineering)  
Maritz, Anneri (Civil Engineering)  
Marsh, David Anthony (Mechanical Engineering)  
Masondo, Phumlani Thulani (Civil Engineering)  
Maybery, Giles Hubert Coyle (Electronic Engineering)  
McDougall, David Michael (Mechanical Engineering)  
Mfiri, Joshua Tatenda (Electronic Engineering)  
Moyce, Shane Alexander (Electronic Engineering)  
Nathnael, Hilda Tangeni Nekulu (Civil Engineering)  
Naudé, Hein (Electrical Engineering)  
Nhawu, Cladius (Civil Engineering)  
Olivier, Anro Malan (Mechanical Engineering)  
Olivier, Carlo Martin (Engineering Management)  
Oluwusi, Oluwadamilaju Ibukunoluwa (Mechanical Engineering)  
Omollo, Nancy Atieno (Electrical Engineering)  
Oosthuizen, Nita-Maré (Industrial Engineering)  
Owusu Prempeh, Clement (Chemical Engineering)  
Pandy, Tashriq (Electrical Engineering)  
Piessou, Claude Ognandou (Mechanical Engineering)  
Porteus, Jacqueline (Chemical Engineering)  
Pretorius, Petrus Johannes (Extractive Metallurgical Engineering)  
Rademeyer, Martin Christian (Electronic Engineering)  
Rauch, Ingrid (Civil Engineering)  
Rautenbach, Megan (Engineering Management)  
Rohwer, Johannes Nils (Mechanical Engineering)  
Rynhoud, Greg Beau (Industrial Engineering)  
Schoeman, Stephan Petri (Electronic Engineering)  
Schommarz, Timmo Marc (Mechanical Engineering)  
Schwegmann, Lloyd Mansfield (Civil Engineering)  
Shiso, Etobo Prince (Civil Engineering)  
Shuda, Joseph Eduan (Electrical Engineering)  
Smit, Izanne (Engineering Management)  
Spratt, Alexander (Chemical Engineering)  
Steiner, Andrew Charles Dudley Pringle (Chemical Engineering)  
Taljaard, Pieter De Wet (Mechanical Engineering)  
Tom, Sihle Christopher (Electronic Engineering)  
Uys, Phillippus Rudolph Spies (Chemical Engineering)  
Van den Heever, Eugene (Civil Engineering)  
Van der Merwe, Waldo (Engineering Management)  
Van der Westhuizen, Robert (Civil Engineering)  
Van Dyk, Carel Christiaan (Mechatronic Engineering)  
Van Eck, Johannes (Mechanical Engineering)  
Van Heerden, Caroline (Engineering Management)  
Van Jaarsveld, Johannes Lodiwikus (Civil Engineering)  
Van Niekerk, Philip Johannes (Mechanical Engineering)  
Venter, Cindy (Civil Engineering)  
Wessels, Carel (Electronic Engineering)  
Wessels, Gerrit Hendrik Wessel (Civil Engineering)

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

Attah-Kyei, Desmond (Extractive Metallurgical Engineering)  
Barnard, Johannes Jacobus (Industrial Engineering)  
Blignaut, Julianne (Mechatronic Engineering)  
Bradford, Dean John (Mechatronic Engineering)  
Broughton, James Kuan (Chemical Engineering)  
Bumhira, Levie (Extractive Metallurgical Engineering)  
Chireshe, Farai (Chemical Engineering)  
Coetzer, Kurt Michael (Electrical Engineering)  
Coleman, Mugammad Fawaaz (Civil Engineering)  
Conway, Jenna-Dawn (Engineering Management)  
De Waal, Alicia (Extractive Metallurgical Engineering)  
Donkor, Kwame Ohene (Chemical Engineering)  
Du Toit, Lorinda (Chemical Engineering)  
Duvenage, Barend Jacobus Lodewicus (Industrial Engineering)  
Dzapas, Broadway Mazwi (Engineering Management)  
Els, Caro (Industrial Engineering)  
Els, Dylan (Electronic Engineering)  
Els, Zandaline (Industrial Engineering)  
George, Theresa Bernadette (Civil Engineering)  
Gericke, Johannes Petrus (Electronic Engineering)  
Gillingham, Ryan Lloyd (Mechatronic Engineering)  
Herman, Hildé (Engineering Management)  
Heyns, Carine (Civil Engineering)  
Hibbert, Luke Thirkell (Electronic Engineering)  
Hurter, Marielle (Chemical Engineering)  
Joubert, Lelani (Industrial Engineering)  
Kapp, Matthew (Mechanical Engineering)  
Ludemann, Jurgen (Electronic Engineering)  
Lüttich, Friedrich Rudolf (Electronic Engineering)  
Mallett, James Gareth (Electronic Engineering)  
Manjengwa, Evelyn Ruvimbo (Extractive Metallurgical Engineering)  
Mcetywa, Kwazelela Sisikelelwe (Civil Engineering)  
Mowzer, Nishaat (Civil Engineering)  
Musariri, Bruce (Extractive Metallurgical Engineering)  
Nel, Ben Abraham Pieter (Electronic Engineering)  
Pagel, Calvin Leigh (Civil Engineering)  
Parku, George Kofi (Chemical Engineering)  
Potgieter, Alicia (Civil Engineering)  
Rebel, Meindertjan (Civil Engineering)  
Retief, Johannes Daniel (Electronic Engineering)  
Roos, Maryke (Industrial Engineering)  
Roux, Gabriël Johannes (Electronic Engineering)  
Seleme, Raphahle Nthabiseng (Chemical Engineering)  
Smale, Corey Jesse (Electronic Engineering)  
Spies, Joubert (Engineering Management)  
Steyn, Anrich Frederik Willem (Electrical Engineering)  
Strauss, Jakolien Adriana (Extractive Metallurgical Engineering)  
Swarts, Romano (Mechatronic Engineering)  
Van Coller, Marius Cornelius (Industrial Engineering)  
Van Der Merwe, Jacobus Pieter (Electronic Engineering)  
Van Zyl, Ilse (Industrial Engineering)  
Vogt, Raphael (Industrial Engineering)  
Walsh, Gerard Louis (Mechatronic Engineering)  
Wiegman, Adrian Peter (Electronic Engineering)  
Wolsky, David William (Electronic Engineering)  
Wotherspoon, Jonathan Bruce (Electronic Engineering)

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

Laubscher, Marais Claude  
Marais, Niel Hardus  
Mohlotsane, Topollo  
Petersen, Renee  
Shahonya, Ignatius Ndaikovanhu

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

Anderson, Anje Marjorie (Industrial)  
Bachrodt, Martin (Mechanical)  
Baldwin, Robert William (Chemical)  
Baloyi, Dineo Amanda (Chemical)  
Baron, Nicole Charmé (Civil)  
Bennett, Joshua (Civil)  
Billingham, Dylan Chad (Chemical)  
Bingle, Harry (Mechanical)  
Blackburn, Dean Basil (Chemical)  
Boer, Paul Rudolf (Industrial)  
Boorman, Timothy Michael (Electrical and Electronic)  
Boshoff, Ludwig Gustav (Industrial)  
Boshoff, Willem Hendrik (Electrical and Electronic)  
Botha, Corné Herman (Industrial)  
Brits, Gabriël (Civil)  
Buys, Petrus Jacobus (Civil)  
Chang, Yi-Fan (Mechatronics)  
Chawatama, Simba Freddie (Electrical and Electronic)  
Cilliers, Aldert Johan (Mechanical)  
Coetzee, Johannes Andries (Electrical and Electronic)  
Coetzee, Tiaan (Civil)  
Crafford, Dirk Johannes (Civil)  
Cronjé, Jason Christopher (Civil)  
Cupido, Jesse Christopher (Mechanical)  
Daugherty, Guy William (Industrial)  
De Jager, Andries Johannes (Electrical and Electronic)  
De Villiers, Jessica Louise (Mechanical)  
De Wet, Christiaan Johannes Eksteen (Mechatronics)  
Dierks, Björn Matthias (Mechatronics)  
Domingo, Andre Jacques (Chemical)  
Du Toit, Rose Emily (Chemical)  
Ellis, Christopher Randall (Mechanical)  
Firmani, Vincent (Civil)  
Fortuin, Clint Kelvin (Industrial)  
Gordon-Grant, Catherine (Mechanical)  
Gouws, Chad (Mechanical)  
Grobler, Jacques (Industrial)  
Grobler, Paul Reghard (Electrical and Electronic)  
Hansen, André Thomas (Civil)  
Hattingh, Callaghan Charl (Chemical)  
Hendricks, Ron-Lynn Veronique (Civil)  
Henning, Nikola (Industrial)  
Herbst, Heinrich Frederick (Mechatronics)  
Hewitson, Jason Rick (Industrial)  
Hogan, Sarah (Mechatronics)  
Ipinge, Mutangeni Atshirero (Mechanical)  
Jacobs, Pierre Malan (Mechanical)  
Jordaan, Hendrik Cornelius Wilhelmus (Industrial)

Joubert, Devin Michael (Electrical and Electronic)  
Jubelin, Tarryn Lisa (Chemical)  
Kalam, Aqeelah (Civil)  
Kamaldien, Mu-Aath-Ibnu-Yunus (Mechanical)  
Kamhoot, Robert Reinier Leonard (Mechatronics)  
Kamoetie, Tiana Lesley Anne (Mechanical)  
Klaasen, Zachary Kwame (Industrial)  
Labuschagne, Albertus Willem (Mechanical)  
Lafite, Ryan Rudi (Mechatronics)  
Lambrecht, Kiera Nareece (Chemical)  
Lambrechts, Marezelle (Mechatronics)  
Le Kay, Jamey (Civil)  
Loots, Schalk Willem (Mechanical)  
Maass, Aninda (Industrial)  
Malan, Adriaan Gabriel (Mechanical)  
Manganyi, Amukelani Edmond (Mechanical)  
Meinie, Nicole Xolisa (Chemical)  
Meyer, Heinrich Karl (Industrial)  
Mokhethi, Keithabetse Kutlo (Civil)  
Nell, Calvin (Industrial)  
Nelumbeni, Nonhlanhla Glory (Mechanical)  
Notayi, Lillian (Industrial)  
Odendaal, Diwan Uys (Mechanical)  
Pieterse, Sarel Jacobus (Chemical)  
Pretorius, Annemie (Mechatronics)  
Pretorius, Rian (Civil)  
Radebe, Luyolo Nkanyezi (Mechatronics)  
Raphoolo, Timeletso Justinus (Industrial)  
Rubidge, John Walter (Mechatronics)  
Rudman, Heinrich Dionne (Electrical and Electronic)  
Scott, Tylo (Mechatronics)  
Smit, Hermé Charles (Electrical and Electronic)  
Smit, Larisa (Industrial)  
Smit, Willem Adriaan (Mechanical)  
Solomon, Moegammad Ayyoob (Civil)  
Stander, Adam Johannes (Chemical)  
Stemmett, Andre Pierre Christopher (Civil)  
Swanepoel, Rolize (Civil)  
Taute, Regan (Civil)  
Thompson, Gregory James Haigh (Chemical)  
Uys, Cecile (Industrial)  
Uys, Jacobus Johannes (Industrial)  
Van der Merwe, Lucas Wilhelmus (Electrical and Electronic)  
Van der Voort, Riaan (Civil)  
Van Heerden, Zandr  Smit (Electrical and Electronic)  
Van Schalkwyk, Christian Frederik (Industrial)  
Van Staden, Kerry-Ann (Civil)  
Van Veyeren, Gustav Radloff (Civil)  
Van Zyl, Megan (Industrial)  
Vermeulen, Guillian Johannes (Industrial)  
Vivier, Daniel Johannes Jonker (Civil)  
Wust, Chrisjan (Electrical and Electronic)

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

H sselmann, G nther (Industrial)  
Matthee, James John (Mechanical)