



UNIVERSITEIT
iYUNIVESITHI
STELLENBOSCH
UNIVERSITY

100
1918 · 2018

Gradeplegtigheid

31 Maart – 3 April 2020

Graduation

31 March – 3 April 2020



Prof Wim de Villiers

Rektor en Visekanselier
Rector and Vice-Chancellor

Beste Matie-graduandus

Volgens die Universiteitsalmanak moes ons van 31 Maart tot 3 April 2020 ons herfsgradeplegtighede gehad het. Weens die landwye inperking om die verspreiding van die koronavirus te stuit, was dit egter onmoontlik.

Nietemin wou ons, as universiteitsgemeenskap, steeds ons studente se prestasies vier. Daarom het ons besluit om hierdie virtuele plegtigheid vir die toekenning van kwalifikasies aan te bied. Op dié manier kan ons byeenkom, al is dit aanlyn, om jou geluk te wens en jou ook 'n kans te gee om jou vreugde met familie en vriende te deel.

Let asseblief daarop dat jy steeds die geleentheid sal hê om by ons Desember-gradeplegtighede oor die verhoog te stap, na gelang van hoe die COVID-19-situasie ontvou. En hoewel ons weens die inperking nie nou jou kwalifikasie aan jou kan pos nie, sal jy dit ontvang sodra dit moontlik is. Hou gerus ons webtuiste, www.sun.ac.za, dop vir besonderhede in dié verband.

Onthou asseblief dat die Universiteit Stellenbosch altyd jou akademiese tuiste sal wees. Gaan gerus na ons alumniplatform by www.matiesconnect.com om in verbinding te bly met jou vriende, na werksgeleenthede te kyk, 'n mentor te soek en op hoogte te bly van netwerkgeleenthede – alles op een plek.

Ek wens jou alle sterkte toe. Bly veilig!

Prof Wim de Villiers
Rektor en Visekanselier

Dear Matie graduand

In terms of the University Almanac, we would have had our autumn graduation ceremonies from 31 March to 3 April 2020. But because of the national lockdown to curb the spread of the coronavirus, that was not possible.

However, as a university community, we still wanted to celebrate our students' achievements. So we decided to host this virtual ceremony for conferring qualifications. We are coming together, albeit online, to congratulate you, and to allow you to share your joy with family and friends.

Please note that you will still have the opportunity to walk across the stage at our December graduation ceremonies, depending on how the COVID-19 situation develops. And although we cannot currently send you your qualification by mail because of the lockdown, you will receive it as soon as it becomes possible. We will keep you updated on our website, www.sun.ac.za.

I want you to remember that Stellenbosch University will always be your academic home. Visit our online alumni platform at www.matiesconnect.com to stay in touch with your friends, and to find job postings, mentors and networking opportunities – all in one place.

I wish you all the best. Stay safe!

Prof Wim de Villiers
Rector and Vice-Chancellor



Regter | Justice
Edwin Cameron
Kanselier | Chancellor

Beste lid van die Universiteit Stellenbosch- gemeenskap

Dit is vir my 'n groot eer om as voorsitter op te tree van hierdie virtuele plegtigheid in my nuwe amp, wat ek op 1 Januarie 2020 opgeneem het.

Hierdie spesiale geleentheid is uit buitengewone omstandighede gebore. Die ernstige bedreiging wat COVID-19 inhou, vereis dat ons almal dinge anders doen as waaraan ons gewoond is. Soos president Cyril Ramaphosa egter gesê het: "As ons saamwerk, sal ons hierdie siekte oorwin. Ek is oortuig dat ons dit sal oorkom."

Ek is besonder trots daarop om vandag 3 278 grade, diplomas en sertifikate toe te ken. Dit bring die totale getal kwalifikasies wat die Universiteit Stellenbosch vir die akademiese jaar 2019 toegeken het op 9 120 te staan – 'n uitsonderlike bydrae tot ons samelewing.

Ek en die Universiteit wil graag ons respek, waardering en gelukwensing uitspreek teenoor alle rolspelers – studente, dosente, studieleiers en promotors.

Familielede verdien spesiale vermelding – en so ook al die vriende, skenkers en borge wat vandag se graduandi tot die einde toegewyd en doelgerig help werk het om hulle kwalifikasies te behaal.

Aan elke graduandus: Ek hoop die vreugde en trots waarmee ons vandag jou prestasie vier, sal mettertyd in iets selfs kosbaarder ontwikkel – 'n verantwoordelikheid- en pligsbesef. Jou nuwe kwalifikasie, jou nuwe status, bied jou die geleentheid om die kennis, vaardighede en netwerke wat jy deur jou studies opgebou het, te benut om ons land en wêreld 'n beter plek vir almal te maak.

Nou, meer as ooit vantevore, behoort ons die geleentheid om tot die samelewing by te dra met oorgawe aan te pak.

Regter Edwin Cameron
Kanselier

Dear member of the Stellenbosch University community

It is a great honour for me to preside at this virtual ceremony in my new role, which I assumed on 1 January 2020.

We created this special event under extraordinary circumstances. We are all required to change the way we do things because of the dire threat COVID-19 poses. But as President Cyril Ramaphosa said, "If we work together, we will beat this disease. I have no doubt that we shall overcome."

It makes me particularly proud to confer 3 278 degrees, diplomas and certificates today. This brings the overall number of qualifications conferred by Stellenbosch University for the 2019 academic year to 9 120 – an exceptional contribution to our society.

The University and I extend our respect, appreciation and congratulations to everyone involved – students, lecturers, supervisors and promotors.

Family members deserve a particular mention – as well as the friends, donors and sponsors who supported today's graduands in the dedication and focus that acquiring their qualifications demanded.

To every graduand: My wish is that the pride and joy we rightly share at your achievement today will grow into something even more precious – a sense of duty and responsibility. Your new qualification, your new status, gives you the opportunity to use the knowledge, skills and networks you gained through your studies to help make our country and the world a better place for all.

Now, more than ever, we should embrace with enthusiasm the opportunity to contribute to society.

Justice Edwin Cameron
Chancellor

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Klik hier vir toegang tot die virtuele toekenning van grade, diplomas en sertifikate deur die Universiteit Stellenbosch (alle fakulteite), vir die gradeplegtighede wat oorspronklik vir 31 Maart tot 3 April 2020 beplan is.

Click here to access the virtual conferral of degrees, diplomas and certificates by Stellenbosch University (all faculties), for the graduation ceremonies originally scheduled for 31 March to 3 April 2020.



Fakulteit
AgriWetenskappe

Faculty
AgriSciences

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte Doctor of Philosophy

BANGANI, Noluvuyo Muriel (Animal Science)

Comparing feed use efficiency and enteric gas production of Holstein and Jersey cows in a Kikuyu pasture-based system using mathematical models

Feed use efficiency for maximum milk synthesis while ensuring responsible use and protection of the environment is of significance for sustainable milk production. This study compared factors affecting milk production, nutrient use and enteric gas production efficiencies of Holstein and Jersey cows that were reared under similar environmental conditions and management practices. The results indicated that neither of the two breeds were overall more efficient regarding all traits, but Jersey cows showed higher efficiency in most measured traits. Enteric gas emissions were also observed to differ with parity and lactation stage. This indicates that accounting for production stages in estimating methane produced/head/year will bring more accuracy and can therefore be recommended for regional and national inventories for South African dairy breeds.

Supervisor: Prof K Dzama

Co-supervisors: Dr CJC Muller, Prof CW Cruywagen, Dr F Nherera-Chokuda (external)

DEACON, Charl (Entomology)

Abiotic and biotic drivers of African aquatic insect distribution

Aquatic insects, such as dragonflies, beetles and bugs, are excellent indicators of freshwater quality. In a water-scarce country such as South Africa, they are valuable in that they tell us whether water quality is deteriorating, and when and where action is required to improve it. The type and number of insects living in water then illustrate how successful we are in terms of improving the quality of water supplies. This improvement can be done by ensuring that both still and running water are well endowed with a profusion of natural plants both in the water and on the banks.

Supervisor: Prof MJ Samways

Co-supervisor: Prof JS Pryke

ERASMUS, Justin (Wood Product Science)

Modelling the effect of stand density management and environmental variables on wood and lumber properties

Rapid growth rates and a reduction in the mean harvesting age of modern forest plantations have resulted in a decrease in the stiffness of structural lumber. This study investigated the potential of improving the mechanical properties of lumber by reducing the growing space between *Pinus patula* trees. The results indicated that higher planting densities can be used as a successful management intervention tool to improve the stiffness of South African-grown lumber. In addition, low levels of water supply and the ratio of nitrogen to potassium fertilisation can also increase the stiffness of *Pinus patula* saplings.

Supervisor: Dr CB Wessels

Co-supervisor: Dr D Drew

HAARHOF, Stephanus Johannes (Agronomy)

New perspectives on plant population and row spacing of rainfed maize

The study found that maize plant population and row spacing should be adapted for no-tillage and Conservation Agriculture to optimise maize yield. Crop intensification and diversification, crop residue retention and livestock integration are needed to promote sustainability in South African maize production systems. In high-rainfall regions, increased plant population and narrow rows lead to increased maize yield under Conservation Agriculture. In semi-arid environments, the optimal plant population and row spacing are a trade-off between obtaining high yield and minimising the risk of crop failure.

Supervisor: Dr P Swanepoel

Co-supervisor: Prof N Kotzé

INAMAHORO, Micheline (Horticultural Science)

Physiological dynamics of dormancy in apple buds grown in areas with insufficient winter chill

Lack of winter chill leads to improper dormancy release and protracted and poor budbreak, which impact negatively on apple production. Respiration pathways and lipid composition were investigated in two climatically contrasting areas and with the use of a rest-breaking agent (RBA). Under mild winter conditions, the energy-producing respiration pathways failed to increase and, together with a low desaturation of C18 fatty acids, created a mitochondrial membrane with reduced capacity. Similar to sufficient chill winter conditions, a hydrogen cyanamide and oil treatment (RBA) broke dormancy by increasing respiration and the amount of saturated fatty acids, which support growth resumption in spring.

Supervisor: Dr ED Louw

Co-supervisor: Prof WJ Steyn (external)

LOUW, Eugenie-Lien (Horticultural Science)

*Growth manipulations of *Leucospermum* cut flowers by means of plant growth regulators*

Leucospermum is an important indigenous cut flower genus earning foreign revenue. Yet, consistently short and curved shoots affect profitability and the South African market share. This study evaluated the efficacy of using selected plant growth regulator treatments (PGRs), in particular gibberellin, with or without 6-benzyladenine, to improve stem quality to meet market demands. Early shoot growth was shown to be the optimum period for PGR applications. Shoot curvature and its manipulation in *Leucospermum* were compared in two cultivars with contrasting growth habits. The application of PGRs proved an effective tool to increase shoot length and straightness, with proven commercial applicability.

Supervisor: Dr EW Hoffman

Co-supervisor: Prof G Jacobs

LUFU, Robert (Food Science)

Transport phenomena in pomegranate fruit: Mechanisms of weight loss and control strategies

Pomegranate fruit is highly susceptible to moisture loss during storage and transportation, causing an economic loss in the industry. The findings of this study showed the mechanisms of water loss in pomegranate fruit and characterised the structural and quality changes in storage and transit. The study followed a comprehensive approach using micro-imaging techniques, computational modelling and experimentation. The study highlights surface waxing as the potential solution for controlling water loss in pomegranates.

Supervisor: Prof UL Opara

Co-supervisor: Dr AA Tsigie

LUYT, Eustatius Du Chavoux (Conservation Ecology)

Farming with predators: An agro-ecological approach to human–wildlife conflict on Namibian farmlands

Human–wildlife conflict is an increasing problem worldwide, threatening the long-term survival of most large African carnivores. This study investigated the conflict between livestock farmers and four major predators of livestock in Namibia, namely black-backed jackals (*Canis mesomelas*), caracals (*Caracal caracal*), cheetahs (*Acynonix jubatus*) and leopards (*Panthera pardus*). The relevant aspects of the predators' behavioural ecology and the agricultural realities provided by farmers were combined in a single probabilistic agro-ecological model. This model was used to design a computer decision support system that managers and farmers can use to mitigate the conflict between predators and livestock farmers.

Supervisor: Dr AJ Leslie

Co-supervisor: Prof C Hui

MARANDURE, Tawanda (Animal Science)

System dynamics approach to evaluating sustainability of the low-input ruminant farming system in South Africa

Existing sustainability evaluation frameworks do not consider complex realities of the low-input ruminant farming system, including multiple goals of farmers, multifunctional roles of ruminants and credence value attributes of the system. This study developed a system dynamics-based framework for evaluating the sustainability of the low-input ruminant farming system in South Africa. The application of the framework in the Eastern Cape province of South Africa revealed that the low-input ruminant farming system was ecologically unsustainable, but economically and socially moderately sustainable. Overall, the low-input ruminant farming system was moderately sustainable.

Supervisor: Dr C Mapiye

Co-supervisors: Profs K Dazama, G Makombe (external), Dr W Hoffmann

MBULAWA, Zama Thandekile Laureen (Genetics)

Mapping of dwarf growth habit traits in apple (*Malus pumila* Mill.) using molecular markers and transcriptomics approaches

Apple (*Malus pumila* Mill.) is one of the most important deciduous fruit crops worldwide. Expression of hybrid necrosis in plants can lead to a significant reduction in productivity due to the deleterious epistatic interactions between alleles that arose from divergent genetic backgrounds. This is the first study to examine the genetic basis underlying the crinkle dwarf phenotype in apple by employing multidisciplinary approaches, including segregation pattern studies, self-incompatibility (hybrid incompatibility) assessment, molecular mapping and transcriptomic profiling. In future, this will aid in the design of crosses with predictable outcomes for high-productivity orchards, while avoiding raising dwarf growth habit associated with this deleterious trait.

Supervisor: Dr AE Van der Merwe

Co-supervisor: Dr J Kriel (external)

MILLER, Neil (Food Science)

Development of a gastroretentive anti-diabetic nutraceutical incorporating polyphenol-enriched fractions of *Cyclopia genistoides*

A protocol for the production of fractions enriched in xanthenes and benzophenones from a *Cyclopia genistoides* (honeybush) extract was established for the development of an anti-diabetic nutraceutical, with mode of action the inhibition of intestinal alpha-glucosidase (AG). Enrichment was achieved by subjecting the extract to ultrafiltration, followed by adsorbent resin chromatography of the permeate. The xanthone-enriched fraction was more potent as AG inhibitor *in vitro* than the benzophenone-enriched fraction and showed greater synergistic interaction with the drug acarbose. This suggests potential for a combination therapy. *Ex vivo* intestinal transport studies confirmed poor absorption of these compounds in the gut, the site of action.

Supervisor: Dr CJ Malherbe (external)

Co-supervisor: Prof E Joubert (external)

MOTLHALAMME, Thato Yoliswa (Wine Biotechnology)

Characterization of melatonin production and physiological functions in yeast

Melatonin is an antioxidant and functions as a signalling molecule (or hormone) in higher eukaryotes. Various medical applications of the compound are well established, but questions remain regarding its molecular and cellular mode of action. This study systematically evaluated the production and the molecular and physiological roles of melatonin in the eukaryotic model system *Saccharomyces cerevisiae*, using microbiological, molecular and bioinformatics tools. The data challenge previously published reports and suggest that melatonin does not play some of the previously suggested roles. The study provides a novel and well-supported baseline to evaluate the role of melatonin in future studies.

Supervisor: Prof FF Bauer

Co-supervisor: Prof BA Prior

MWIJE, Anthony (Horticultural Science)

A study of the dynamics of sunburn reduction in apple (*Malus domestica*) using foliar applications of a combination of boron and calcium

An alternative approach using early-season foliar applications of combined boron and calcium significantly reduced sunburn browning incidence in Golden Delicious and Cripps Pink apples under South African climatic conditions. This provides an affordable and sustainable systemic approach to mitigate fruit sunburn in apple orchards. However, to optimise and promote this approach, the underlying mode of action must be demonstrated. In this study, different boron plus calcium formulations variably influenced peel biochemical levels as fruit matured, and no single metabolite explained the effect satisfactorily. An additive metabolite action is postulated, based on contributions from particularly phenolic and photosynthetic biochemicals to the supposed mode of action.

Supervisor: Dr E Lötze

Co-supervisor: Dr EW Hoffman

NDAYIHANZAMASO, Privat (Plant Pathology)

Evaluation of East African cooking bananas for resistance to *Fusarium oxysporum* f.sp. cubense Race I

Bananas are a staple food and source of income for millions of smallholder farmers in East and Central Africa. Fusarium wilt, caused by the soil-borne fungus *Fusarium oxysporum* f. sp. *cubense* (Foc), is severely affecting banana production in the region. The disease can be managed by preventative measures and by planting resistant varieties. Molecular markers were developed to identify Foc strains in East and Central Africa, and small plant screening methods were optimised to find disease-resistant varieties. Mchare and Matooke hybrids resistant to Foc Race I may be planted in banana fields infested with Foc Race I.

Supervisor: Prof A Viljoen

Co-supervisors: Drs D Mostert, G Mahuku (external)

NYAMAKWERE, Faith (Animal Science)

Development of an artisanal cheese-making model for small-scale farmers in South Africa

Potential opportunities exist to implement artisanal cheese making to help empower small-scale farmers, improve people's nutritional status at a minimum cost and stimulate the local economy. The aim of this study was to develop an artisanal cheese-making model for small-scale dairy farmers in South Africa. A hard-pressed cheese and ricotta were successfully produced at a small scale with low-input investment. Cheese quality was noted to be influenced by cow breed and aging conditions. If small-scale producers are given access to relevant information, they may be able to consider cheese processing as a business, with limited resources and capital needed.

Supervisor: Dr E Raffrenato

Co-supervisors: Dr G Esposito, Prof K Dzama

NYENDA, Tatenda (Conservation Ecology)

Vegetation establishment and soil development on a chronosequence of abandoned gold and nickel tailings and across ecological gradients in the Great Dyke region, Zimbabwe

Ecosystems development was studied on a chronosequence of gold and nickel mine tailings in Zimbabwe to better understand the trajectory of change over decades to a century. Biological crusts are early colonisers of tailings, preceding significant establishment of plants by decades. Biological crusts are facilitated by changes in pH and organic matter and in turn contribute to increases in soil fertility. Vegetation composition for unrehabilitated gold tailings follows a trajectory towards natural reference conditions, while on rehabilitated nickel mine tailings novel ecosystems are formed. The study informs restoration planning on gold and nickel mines in the African savanna region.

Supervisor: Prof SM Jacobs

Co-supervisor: Prof W Gwenzi (external)

PIETERSE, Annika (Nematology)

In vitro production and biocontrol potential of nematodes associated with molluscs

This study focused on finding a local nematode isolate for the biological control of invasive molluscs in South Africa. The pathogenicity of nematodes found during surveys was tested, new species were described and the lifecycles of different nematode species were analysed to determine their suitability for mass culture. The mass-culturing process was then optimised by growing the nematodes on different bacterial isolates and testing the effect of different growth conditions. Other control methods were also tested in field trials for use as part of an integrated pest management strategy.

Supervisor: Prof AP Malan

Co-supervisor: Dr JL Ross (external)

SENDIN, Kate (Food Science)

Reduced wavelength spectral imaging for grading defect and asymptomatic Fusarium detection in white maize

In this study, spectral imaging is proposed as an alternative to manually sorting white maize. The aim of the system was to classify maize according to South African white maize grading legislation and detect asymptomatic *Fusarium* fungal contamination. Due to high costs and slower analysis times associated with hyperspectral imaging, waveband optimisation was used to reduce the amount of data required for accurate classification. The system showed promise for maize grading, where defective maize kernels and foreign materials were classified with moderate to high accuracies. Asymptomatic infection detection was not possible using this technique; however, the ubiquity and significance of *Fusarium* contamination in South Africa were revealed.

Supervisor: Dr PJ Williams

Co-supervisor: Prof M Manley

SHANGE, Nompumelelo Benedicta (Food Science)

The prevalence of Campylobacter and Arcobacter species in ostriches from South Africa

Campylobacter and *Arcobacter* species are emerging pathogens that have the potential to cause gastrointestinal infections in humans. Infections in humans are mostly caused by the consumption of contaminated poultry products. Currently, microbial specifications/regulations for the South African meat industry have not been set. With this study, a pre-emptive approach was taken to determine whether ostriches harbour *Campylobacter* spp. and *Arcobacter* spp. and whether contamination could occur during slaughter. Findings from this study will help shape future regulations that will ensure the safety of ostrich meat consumers.

Supervisor: Prof PA Gouws

Co-supervisor: Prof LC Hoffman

SMIT, Samuel Jacobus (Wine Biotechnology)

Sequence-function relationships of the Vitis vinifera L. terpene synthase (VviTPS) family towards understanding the grapevine flower volatilome

Plants produce thousands of specialised metabolites, including terpenes, which serve a diverse array of functions. Grapevine terpenes are associated with the flavour and aroma of wine. Grapevine flowers are potent terpene factories and chemotyping of flowers demonstrated cultivar-specific bouquets. The large grapevine terpene synthase family was computationally analysed in three diploid genomes. This was coupled with functional characterisation of terpene synthase, resulting in the discovery of a novel sesquiterpene synthase involved in the unique flower bouquet of Muscat of Alexandria. The insights from this study further our understanding of the biochemical and genetic processes involved in grapevine terpene biosynthesis.

Supervisor: Dr P Young

Co-supervisor: Prof MA Vivier

SWART, Rudi Crispin (Conservation Ecology)

Interactions between indigenous southern Afrotemperate forest trees and arthropod diversity

Arthropod biodiversity in Afrotemperate forests is both threatened and unexplored despite driving ecosystem processes such as herbivory and decomposition. This study shows that the context in which a tree grows (natural, semi-natural or planted) severely affects canopy arthropods, questioning the planting of native trees in cities to promote native biodiversity. Each tree species hosts unique arthropod assemblages and the loss of a single species would lead to substantial extinctions. Changes in plant physiological features due to environmental factors solicited unpredictable effects on canopy arthropods, rendering generalisations of forest arthropod responses to anthropogenic changes such as climate change nearly impossible.

Supervisor: Prof F Roets

Co-supervisor: Prof M Samways

TAYENGWA, Tawanda (Animal Science)

Beef production and biopreservative effects of dietary citrus and winery by-products

Feedlot and meat industries in South Africa are experiencing feed shortages and post-harvest meat losses, mainly as a result of prolonged droughts and oxidative processes, respectively. This study evaluated the effects of partially replacing wheat bran with dried citrus pulp or grape pomace in cattle diets on beef production and quality. Partial substitution of dried grape pomace for wheat bran increased beef production and oxidative stability compared to dried citrus pulp. Dried grape pomace as a partial replacement for wheat bran in cattle diets may represent a feasible strategy to improve beef production and shelf life.

Supervisor: Dr C Mapiye

Co-supervisors: Dr MER Dugan, Prof T Mutsvangwa (external)

TENYANE, Seipati Precious (Wine Biotechnology)

Directed evolution of wine-related lactic acid bacteria and characterisation of evolved strains

Directed evolution is a strategy applied to improve industrial microbial strains. The strategy usually targets single and highly specific traits of interest. This study adopted a novel approach, applying the multiple biotic selection pressures exerted by fermenting yeast strains to evolve a strain of lactic acid bacteria. Evolved bacterial strains were evaluated and their genomes sequenced and compared. The data revealed novel yeast strain-specific and alcoholic fermentation generic traits in evolved strains, and potential target genes where identified. The study presents entirely new insights into molecular evolutionary processes in multispecies ecosystems, while also producing strains with commercial potential.

Supervisor: Prof F Bauer

Co-supervisors: Dr D Rossouw, Prof M Du Toit

THERON, Hanle (Viticulture)

Impact of climate change factors on physiological and vegetative growth parameters of young grafted grapevines

Climate change may strain young grapevine growth, directly affecting the performance of mature vineyards. In this study, physiological functioning and growth of potted Shiraz and Merlot (rootstock 101-14 Mgt) were measured after planting in simulated future climatic conditions, i.e. water deficit and higher temperature and CO₂ levels. Although phenological behaviour was not affected, elevated CO₂ mitigated detrimental effects of water deficit on physiological activity (e.g. photosynthesis) and invigorated growth, irrespective of temperature. Merlot was more sensitive to water deficit, but surpassed Shiraz at higher CO₂ levels. The findings indicated that soil preparation, scion-rootstock choices, root growth stimulation and water availability would become increasingly important for sustainable viticulture in future climate scenarios.

Supervisor: Prof JJ Hunter (external)

VAN DER MERWE, Daniel Andre (Animal Science)

Modelling the growth, feed intake and backfat deposition of different South Africa sheep breed types

Growth and production data were collected from seven different South African sheep breeds that varied in their potential for wool and meat production as well as adaptability. Models were then generated to describe the growth curve, change in feed intake, backfat deposition and wool growth of the different breeds until maturity. These models can be used in order to run simulations and thereby predict the optimal market weights of lambs in order to obtain optimal profitability. This study also describes the feedlot production characteristics as well as carcass quality characteristics of producing premium lamb from different breeds.

Supervisor: Prof TS Brand (external)

Co-supervisor: Prof LC Hoffman

VAN DER MESCHT, Aileen Celeste (Conservation Ecology)

Persistence of insect biodiversity within a timber production landscape mosaic

Protection of healthy landscapes is vital for ensuring human survival in the long term. This protection is achieved by sustaining biodiversity in conservation areas in and among agricultural production areas. These set-aside areas maintain a wide range of plants and small animals, which rejuvenate the production areas by keeping the soil in a living state. However, we need to assess how well these organisms are performing to ensure that they are effective in undertaking all the essential processes. This can be done by measuring the species and their numbers directly, and by using singing insects as an efficient assessment surrogate.

Supervisor: Prof MJ Samways

Co-supervisor: Prof JS Pryke

VAN DYK, Meagan (Plant Pathology)

Characterisation, epidemiology and management of olive trunk disease pathogens in the Western Cape

In this study, 33 fungal species were identified as olive trunk pathogens, with *Pseudophaeomoniella* sp. as one of the most important pathogens. The olive propagation process was identified as inoculum source for some pathogens, including *Pseudophaeomoniella*. Inoculum sources of *Pseudophaeomoniella* were identified in established orchards. Olive pruning wounds remained susceptible to *Pseudophaeomoniella* for prolonged periods. Pruning wound protection with MTI, a biological control agent, was effective under lower inoculum pressure, while Tree Seal and Coprox/Bendazid were effective under high inoculum pressure. This study leads to new knowledge regarding olive trunk pathogens, their detection, epidemiology and control, which can be used to develop improved management strategies.

Supervisor: Prof F Halleen

Co-supervisors: Prof L Mostert, Dr CFJ Spies (external)

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Natuurwetenskappe Master of Science

Beukes, Louisa (Wine Biotechnology)
De Villiers, Doré (Plant Pathology)
Eloff, Julia (Entomology)
Mokonotela, Tshepo Tshiamo (Wine Biotechnology)
Patience, Ashley O'brian (Sustainable Agriculture)
Van der Merwe, Elizabeth (Plant Pathology) (*cum laude*)

Magister in die Natuurwetenskappe in Landbou Master of Science in Agriculture

Bester, Andries Johannes (Horticultural Science)
Burger, Abraham Johannes Hendrik (Animal Science)
Carstens, Louis Wilhelm (Agronomy)
Cupido, Melissa (Animal Science)
Dedekind, Ruben (Horticultural Science)
Doe, James Wonder (Horticultural Science)
Du Plessis, Anél (Animal Science) (*cum laude*)
Gwanongodza, Tafara (Agricultural Economics)
Henn, Angelique (Animal Science)
Joscelyne, Mark (Aquaculture)
Krogscheepers, Cornelius (Horticultural Science)
Lyne, Kirsty Yvonne (Animal Science) (*cum laude*)
Madubela, Ncumisa (Soil Science)
Malan, Carmen (Animal Science)
Mazungunye, Panashe Paul (Agricultural Economics)
Mtshiselwa, Ziyanda Lwanda (Agricultural Economics)
Mulanda, Stephen Mulanda (Agricultural Economics) (*cum laude*)
Parker, Robert Hamilton (Agricultural Economics)
Roos, Tenisha (Animal Science)
Saki, Ayanda (Agricultural Economics)
Scholtz, Diederik Arnoldus (Horticultural Science) (*cum laude*)
Silberbauer, Bianca Louise (Animal Science) (*cum laude*)
Singini, Dorica (Agricultural Economics)
Steyn, Theunis Christian (Agricultural Economics) (*cum laude*)
Truter, Karen Joané (Agronomy) (*cum laude*)
Uys, Janien (Animal Science)
Van der Westhuizen, Christoff George (Agronomy) (*cum laude*)
Van der Westhuizen, Marno Wiehann (Horticultural Science) (*cum laude*)
Van Leeuwen, Maira Margaretha (Animal Science)
Van Staden, Yolande (Viticulture) (*cum laude*)
Venter, Gabriella (Animal Science)
Walls, James Russell (Oenology) (*cum laude*)

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

Dlamini, Tenele Unity (Wood Product Science)
Gonya, Nkosinamanda Artwel Sizwe (Wood Product Science)
Mphahlele, Lebogang Ivonne (Forest Science)
Sibiya, Zimbili Bonisiwe (Forest Science)
Soludongwe, Siviwe (Wood Product Science)

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

Arendse, Lee-Roy Colin (Conservation Ecology) (*cum laude*)
Hartmann, Wesley Laurence (Conservation Ecology)
Nependa, Uemuvanga Jatandavara Heather (Conservation Ecology) (*cum laude*)
Schultz, Brittany Claudia
Sievert, Olivia (Conservation Ecology) (*cum laude*)
Steed, Adam John (Conservation Ecology)
Van Heerden, Hendrik Petrus (Conservation Ecology) (*cum laude*)

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

Badenhorst, Adriaan Bernard (Food and Nutrition Security)
Phungwayo, Thobile (Food and Nutrition Security)

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

Edwards, Richard Frederick (*cum laude*)
Febbraio, Tanino
Jordaan, Kayla-Anne (*cum laude*)
Kavela, Efaisha Tweuhanga Angaleni
Keet, Rochelle (*cum laude*)
Makhubo, Qhakazile Angel
Mapling, Celeste Nadine
Psarrakis, Judi (*cum laude*)
Rust, Alexandra Elizabeth (*cum laude*)
Smit, Paula (*cum laude*)

Magister in Landboubestuur Master of Agricultural Management

Bezuidenhout, Blanché Chenay (Agricultural Economics)
Kooper, Paulus (Agricultural Economics) (*cum laude*)
Nkamisa, Lwando (Agricultural Economics)

Honneurs-Baccalaureus in die Natuurwetenskappe Bachelor of Science Honours

Bishop, Robyn (Plant Pathology)
Jacobs, Vernon Guy (Plant Pathology)
Petzsch, Irmela (Wine Biotechnology) (*cum laude*)

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

Nolte, Ernst Hendrik

Nagraadse Diploma in Agronomie Postgraduate Diploma in Agronomy

Blok, Rory Daniel (*cum laude*)
Le Roux, Hendrik Andries Johannes
Mfengu, Musa
Muller, Elsa
Nomlala, Spesande Gift

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

Baccalaureus in die Natuurwetenskappe in Landbou
Bachelor of Science in Agriculture

Beale, Madison Chelsea (Animal Science)
Beukes, Hendrik Petrus (Agricultural Economics)
Brown, Danielle Lisa (Plant and Soil Science)
Cahi, Jodi Lin (Animal Science)
Cillié, Jacobus Daniël (Agricultural Economics)
De Jager, Muriel Mignon (Plant and Soil Science)
Dreyer, Willem Petrus (Plant and Soil Science)
Ehlers, Jandre (Plant and Soil Science)
Engelbrecht, Theunis Jacobus (Plant and Soil Science)
Esterhuyzen, Mia (Agricultural Economics) (*cum laude*)
Ferreira, Dehan (Plant and Soil Science)
Jankielsohn, Robert Dean (Agricultural Economics)
Karaan, Zayne (Plant and Soil Science)
Ladegourdie, Jason Nathan (Plant and Soil Science)
Louw, Amandrie (Plant and Soil Science)
Molapo, Mpho (Animal Science with Agronomy)
Moller, Michael Steve (Plant and Soil Science)
Mtswesi, Sinako (Agricultural Economics)
Opperman, Karla Helen (Agricultural Economics)
Smit, Jacobus Hendrik (Viticulture and Oenology)
Theron, Ansuli (Plant and Soil Science)
Theunissen, Kruger (Viticulture and Oenology)
Tshangela, Zizipho Rebecca (Plant and Soil Science)
Van der Walt, Petrus Jacobus (Plant and Soil Science)
Visser, John-Murray (Plant and Soil Science)
Webster, Phillip Peter (Plant and Soil Science)
Wilkinson, Shireen (Agricultural Economics)

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

Magubane, Siphumelele Thembelihle
Meyer, Duval
Neethling, Alwyn
Ngubane, Noncedo
Roelofse, Christopher
Van Niekerk, Jacob Van Reenen

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

Erasmus, Talitha
Mateus, Mikayla Kirsten
Smith, Amber Terry
Tonkin, Christopher John
Van der Westhuizen, Johan Christiaan
Vermonti, Nicola

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

Baleta, Benjamin Mark
Engelbrecht, Mari
Gibbens, Tegan Sarah
Kelfkens, Jesse Morgan
Mabandla, Nosisi
Mzaza, Nomalinge Hilda
Raggett, Samantha Caitlin

Baccalaureus in Landboubestuur
Bachelor of Agricultural Management

Boast, Bradley Travis
Ferreri, Matteo
Goredema, Mukudzeyi Martin
Viljoen, Petrus Cornelis Zacharias

Baccalaureus in Landbou
Bachelor of Agriculture

Baty, Justin
Botha, Marthinus
Bothma, Lehandri
Cele, Thabile Thembeka
Dippenaar, Alwyn Christie
Dreyer, Christopher John
Du Plessis, Frederick Jacobus Roeland
Du Toit, Lu-Ic Petrus
Jacobs, Shannon
La Grange, Slabber Kobus
Lourens, De Wet
Nigrini, Adriaan Johan De Waal
Nontshiza, Okuhle
Swart, Liney
Van der Merwe, Carel
Van der Westhuizen, Elné
Van Niekerk, Jacobus Adriaan
Williams, Natasha-Lee
Wium, Pieter-Hugo



Fakulteit
Ekonomiese en Bestuurswetenskappe

Faculty
Economic and Management Sciences

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte **Doctor of Philosophy**

ACHEAMPONG, Ernest Nti (Public and Development Management)

Stakeholder engagement in sustainable urban water management in the Accra Metropolis, Ghana

This study argues for the need of new approaches to promote sustainable urban water management. It demonstrates that the conventional water management paradigm is no longer adequate to deal with the complexities of urban water systems in contemporary African and developing cities in general. Within an overall theoretical framework of political ecology, it reviews and assesses existing concepts and approaches to sustainable water management, including integrated water resource management, sustainable urban water management and urban metabolism.

Supervisor: Prof M Swilling

AKONGWALE, Sabastine (Development Finance)

Essays on fiscal policy implementation and governance: Evidence from sub-Saharan Africa (SSA)

Despite the adoption of fiscal rules by several African economies, fiscal policy outcomes remain compromised by weak fiscal transparency. This study is a collection of three empirical essays that investigated the institutional, political and economic determinants of fiscal transparency in sub-Saharan Africa. The results showed that the institutional governance index; political variables, including partisan fragmentation and ethnic fractionalisation; and economic factors such as trade openness and debt service determine fiscal transparency in sub-Saharan Africa. Hence, to achieve improved fiscal transparency and to optimise fiscal performance, the study recommends that policymakers should focus reforms on the variables identified by this study.

Supervisor: Prof S Ikhide

Co-supervisor: Dr B Mathur-Helm

BUITENDAG, Sven (Mathematical Statistics)

(Double PhD degree: PhD (Mathematics) conferred by KU Leuven, Belgium)

Extreme quantile inference

Supervisor: Prof T de Wet

Co-supervisor: Prof J Beirlant (external)

CHINGOZHA, Tawanda (Economics)

Land rights in sub-Saharan Africa: Measuring impact with satellite images, machine learning and citizen science

Many sub-Saharan African households rely on farming for their livelihood. In a data-scarce context, this study explored machine learning and citizen science to detect land under cultivation and develop urban cadastres from satellite images. Historical data from Southern Rhodesia show that market access is a key precondition for land titles to increase agricultural output. Using quasi-experimental techniques, this study is the first to establish negative national impacts of Zimbabwe's land reform programme on crop cultivation and vegetation health. While citizen science may be a cheaper alternative than machine learning to create urban land cover maps, it can yield low classification accuracy.

Supervisor: Prof D von Fintel

DU RAND, Gideon Petrus (Economics)

A microeconomic model of banking with a strategically determined interbank market

This study analysed banks and financial integration in a setting with liquidity shocks. Banks offer liquidity insurance to households by providing deposit contracts. Households are subject to idiosyncratic components in their liquidity demands, which allows banks to pool this risk. Crucially, offering deposit contracts opens banks to the risk of runs, whereas depositors who are not subject to liquidity shock rationally withdraw funds, as they anticipate low pay-outs in the final period.

Supervisor: Prof S du Plessis

FLOWERDAY, Wayde Thomas (Economics)

Employment policy effects on firm dynamics: Evidence from the South African labour market

This study analysed the inadvertent effects of policies on labour market outcomes in democratic South Africa. The study was primarily empirical in nature, and also makes an excellent contribution by producing a new dataset on collective bargaining. The role of bargaining councils in labour productivity was studied. Overall, smaller firms grow their productivity and wages. The study suggests that small firms that are subjected to bargaining council agreements change their skills composition to keep only the most skilled workers, raising labour productivity.

Supervisor: Prof N Rankin

HEYNS, Etienne David Olivier (Business Management and Administration)

Conflict, innovation and the mediating role of family influence in the South African wine industry

Family businesses are of key importance to the optimal socio-economic development of regions and have unique attributes that distinguish them from their non-family counterparts. This study focused on family businesses in the South African wine industry and investigated the impact of family influence on conflict and innovation. Aspects pertaining to family influence included family commitment and non-economic goals, while socio-economic goals included job creation and community contribution. The study yielded important findings, indicating that family commitment is a significant moderator of conflict and innovation. This dynamic relationship was explained by utilising stewardship theory as well as family long-term orientation. Additional key findings suggested that relationship conflict and harmony (as a non-economic family goal) are both significant moderators of task conflict and innovation. The findings are important contributions to foster an environment conducive to sustainable innovation in family businesses and are of key importance to the South African wine industry.

Supervisor: Prof TJ de Coning

Co-supervisor: Prof E van der Merwe Smit

JESSA, Fakier (Public and Development Management)

Development of a normative framework for the management of an integrated public service system and public value generation with regard to municipalities in the Western Cape province

This study assessed the complexity of creating tangible and non-tangible public value through the synergistic efforts of multiple actors, with housing delivery as the specific case study example. The study adopted a complexity or open systems theory approach to identify the actors involved in housing delivery programmes as well as nine themes that serve to identify a successful integrated public service system. The research engaged senior managers in municipalities in the Western Cape to test these themes through a variety of data collection methods, including a questionnaire, interviews and observations. The study concludes with a detailed set of recommendations to advance integrated public service systems within municipalities to optimise public value creation.

Supervisor: Prof FM Uys

KEMP, Johannes Hermanus (Economics)

Essays on fiscal policy in South Africa

This research topic was appropriately contextualised alongside recent international research agendas on fiscal policy. Largely in response to the 2008 global financial crisis and the perceived inadequacies of monetary policy in mitigating its effects, the study highlights the importance of fiscal policy in counteracting the effects of adverse shocks over the business cycle. The research investigated not only the merits of countercyclical fiscal policies (namely aggregate or sector-specific tax or spending adjustments), but also the underlying microeconomics (behaviour of individuals) using a large, novel and confidential panel dataset. The research therefore has both a microeconomics and a macroeconomics focus.

Supervisor: Prof S du Plessis

LOUW, Willem (Business Management and Administration)

The executive sponsor as key factor in megaproject success: An exploratory study

This study investigated the role of the executive sponsor in the success of large projects ('mega projects', where the value is more than R10 billion). The candidate has significant practical experience in the project management of large projects, and that has been reflected in the dissertation.

Supervisor: Prof WR Gevers

Co-supervisor: Prof J Wium

MALILA, Harry (Public and Development Management)

An integrated conceptual diagnostic governance framework to address performance sustainability challenges of municipalities in South Africa

Local government touches the lives of everybody every day. In South Africa, however, most municipalities continue to struggle to render services adequately and thereby touch lives positively. This study responded to the question of why municipalities are unable to deliver on their core service delivery mandates. The research also explored what should be put in place to ensure that municipalities give effect to the local government developmental agenda in a sustainable manner. The study proposes an integrated municipal diagnostic governance framework that identifies the main good governance and performance elements to lay the basis for sustainable municipal performance.

Supervisor: Prof APJ Burger

Co-supervisor: Dr DJ Brand

MATSURO, Leon (Economics)

Effects of behavioural and psychological attributes on labour market outcomes in an uncertain economic environment

This study offers an important contribution to the empirical evidence on labour markets in developing and sub-Saharan African contexts, particularly those enshrouded by uncertainty. The data utilised are unique and offer exciting possibilities for explaining decision making and economic outcomes (occupational segregation, employment, job mobility and earnings) within the Zimbabwean labour market.

Supervisor: Prof N Rankin

MAPHOSA, Michael (Development Finance)

Lending booms and bank fragility: The South African experience

This study entailed an empirical examination of the link between credit booms and bank fragility in South Africa. The research comprised of three empirical studies, namely an investigation of the aggregate drivers of credit booms in South Africa using the ARDL- and ECM-based causality tests, an investigation of whether excessive growth signalled future vulnerabilities in the South African banking sector and an exploration of the relationship between credit booms and banking sector finance sources and the implication for financial stability.

Supervisor: Prof E van der Merwe Smit

Co-supervisor: Prof S Ikhide

MCHENGA, Martina (Economics)

Making under-resourced health systems work for vulnerable women and children: Antenatal care in Malawi

This study investigated implementation barriers and adoption of maternal healthcare interventions in Malawi, a sub-Saharan African country with one of the highest maternal mortality rates and most poorly resourced health systems in the region. Two major aspects were studied: the supply of quality care and the utilisation thereof. The findings suggested that public policies have an important role to play in promoting maternal preventive healthcare. They prompted women to access care early in their pregnancies, but have not improved quality. In poorly resourced settings, more than three antenatal visits did not provide additional reductions in the risk of low birthweight.

Supervisor: Prof R Burger

Co-supervisor: Prof D von Fintel

MJONONO, Mfusi (Development Finance)

Investigating the costs and value to smallholder farmers participating in the deciduous fruit value chains in South Africa

This study investigated overall cost drivers and value structure that may influence participation of smallholder farmers in the value chain. The study is important in filling the gaps in the literature on costs and value to farmers participating in the value chain. Unfortunately, smallholder farmers in South Africa comprise a very small segment of deciduous fruits producers. A study of this nature should be encouraged in order to open avenues of assisting smallholder farmers to participate in fruit production.

Supervisor: Dr NW Marwa

Co-supervisor: Prof GK Coetzee

MOSES, Eldridge Granville (Economics)

Migration and urbanisation in South Africa and Namibia: An investigation of the intersection between location, deprivation and opportunity in a developing country context

This study investigated migration and urbanisation in South Africa and Namibia with the aid of numerous census and survey data as well as econometric techniques. The study examined internal migration in South Africa with the aid of Census 2011 data, focusing on intraprovincial, interprovincial as well as rural-to-rural, rural-to-urban, urban-to-rural and urban-to-urban migration, with the aid of binomial logistic and multinomial logistic regressions. The key empirical findings were that contemporary internal migration is highly age- and education-selective, and outmigration likelihood is higher for individuals from municipalities with a history of sending more migrants than they receive.

Supervisor: Prof S van der Berg

MOLISE, Thabang Ernest (Economics)

Essays on macroprudential policy and financial stability: The case of South Africa

This was a comprehensive study of the macroeconomic effect of the macroprudential regulations introduced with the so-called Basel III Accord and at the centre of a growing academic and policy debate. The work focused on the countercyclical capital requirement in the Basel III and the countercyclical loan-to-value regulation. These two policies were analysed individually and in conjunction with the monetary policy.

Supervisor: Prof G Liu

NEL, Heinrich (Economics)

Wealth mobility, familial ties and migration: Evidence from the Cape of Good Hope panel

A lack of historical household data means that socio-economic mobility and intergenerational change have been poorly measured in African history. This study contributes to this literature through the analysis of a new long-run longitudinal dataset constructed from Cape Colony tax and genealogical records from the 18th and 19th centuries. Poor prospects for socio-economic advancement entrenched existing inequalities and prompted settler migration to the colonial frontier. Material inheritance practices entailed that first-born sons stayed close to home. Sons with non-material inheritances – those who shared their fathers' names – did not make similar migration decisions. The study provides new perspectives on wealth creation in settler South Africa and deepens understanding of the estimation of intergenerational mobility in a historical context.

Supervisor: Prof D von Fintel

Co-supervisor: Prof J Fourie

ORLANDI, Nelia (Public and Development Management)

Administrative reforms required for the successful implementation of the National Development Plan

The National Development Plan (NDP) sets out South Africa's key development priorities. However, seven years of implementation offers little evidence of progress towards the successful implementation of the NDP. This study focused on the factors that hinder the successful translation of the NDP into the strategic plans and budgets of implementing departments. It offers a set of prioritised recommendations to align departmental plans and budgets to the NDP to facilitate the implementation of national priorities. These considerations are not only useful for South Africa, but also to other governments that adopt a result-based management approach to promote development.

Supervisor: Prof B Rabie

PETRUS, Helvi Ndilimeke (Transport Economics)

Roads infrastructure funding and financing for Namibia: A case study of the national road network

This study empirically analysed the Namibian road-funding framework. A systematic examination of the national accounts revealed that Namibia allocates a large share of road revenue to the road network, comparing favourably with international standards. The research demonstrated the use of the Highway Development and Management Model to determine the marginal external costs of road use. Finally, the implications of setting road user charges at the level of short-run marginal costs were assessed. The results indicated that setting road charges to these economic efficient prices will lead to a significant road-funding deficit. The study makes an important contribution to the road-funding debate in developing countries.

Supervisor: Prof SC Krygsman

TOWO, Neema Robert (Development Finance)

Relationship between training and firm performance for early industrialising economy: Case of Tanzanian firms

The study analysed the interaction effect of training on firm performance. It further examined the effectiveness of conducted training in addressing skills gaps and its respective effect on the firm's productivity. A research space has been created by juxtaposing training effectiveness from a productivity point of view with training effectiveness as a process, of which the effect is not necessarily reflected in productivity.

Supervisor: Dr N Marwa

Co-supervisor: Prof N Mori

VAN DER MERWE, Carel Johannes (Mathematical Statistics)

(Double PhD degree: PhD (Economics) conferred by University of Ghent, Belgium)

Classifying yield spread movements in spars data through triplots

Supervisors: Profs T de Wet, WJ Conradie

Co-supervisors: Profs M Vanmaele, K Inghelbrecht (external)

VENTER, Lieschen (Operations Research)

A systems perspective of basic education in South Africa

This study focused on the topic of a failing basic education system in South Africa, the action plan of the South African Department of Basic Education for improvement and why system dynamics modelling is appropriate for analysing and solving this complex problem. The goal of the research was to examine the impact of school leadership on the academic performance of learners in the South African context.

Supervisor: Prof SE Visagie

VISSER, Michelle (Industrial Psychology)

The development and psychometric evaluation of a medical practitioner: Compassion competency questionnaire

This study focused on compassion as a competency for medical practitioners – a topic that is not well researched. In the qualitative phase, medical practitioners were used as co-researchers to conceptualise compassion. The research succeeded in applying scientific methods in creative ways, investigating compassion of medical practitioners and developing and validating a new measure of compassion for medical practitioners. The measure (and its theoretical foundations) will be useful as a training and development tool.

Supervisor: Prof C Theron

Co-supervisor: Prof R Mash

WABIGA, Paul (Economics)

Foreign and domestic private investments in developing economies: Cases in sub-Saharan Africa

This study investigated differences in the performance and characteristics of foreign-owned companies operating in African economics compared to domestically owned companies using three different datasets and employing a set of methods that are less commonly used in the investigation of foreign-owned companies and firm performance. The study demonstrates that ownership acquisition by a foreign company has a positive causal effect on a number of performance indicators, including wages, employment, output and productivity. Furthermore, the study recommends that African governments create investment environments that attract more foreign direct investment.

Supervisor: Prof N Rankin

XABA, Sharon Thembi (Business Management and Administration)

Performance evaluation of agricultural cooperatives in Mpumalanga province, South Africa

This study explored the performance of agricultural cooperatives in Mpumalanga. The study was designed using a mixed-methods approach that commenced with quantitative analysis of efficiency and profitability of agricultural cooperatives in the Mpumalanga province. This was followed by a qualitative study that investigated stakeholder perceptions on the sustainability of these cooperatives.

Supervisor: Dr N Marwa

Co-supervisor: Dr B Mathur-Helm

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Handelwetenskappe Master of Commerce

Adams, Tiffany Michelle (Logistics Management) (*cum laude*)
Asbrand, Pauline (Economics) (*cum laude*)
Balone, Lintle (Economics)
Bartsch, Nicole (Quantitative Management)
Bingel, Christopher Andreas (Transport Economics)
Botha, Dylon (Statistics) (*cum laude*)
Chipunza, Crispin (Industrial Psychology)
Clift, Peter-John (Financial Risk Management)
De Vos, Uanne (Industrial Psychology) (*cum laude*)
Dehosse, Solene Jaqueline (Business Management)
Du Plessis, Talita (Industrial Psychology)
Duminy, Aldu Lorenzo (Economics) (*cum laude*)
Fincham, Ashleigh Paige (Quantitative Management)
Fourie, Carmen (Industrial Psychology) (*cum laude*)
Joubert, Kendra Leigh (Industrial Psychology) (*cum laude*)
Kisten, Chloe (Logistics Management)
Kleingbiel, Kristi (Industrial Psychology)
Köhler, Timothy Peter (Economics) (*cum laude*)
Law, William Robert (Economics)
Lombard, Francois De Villiers (Industrial Psychology) (*cum laude*)
Louw, Gerrit Ernest (Industrial Psychology)
Makhwatha, Karen Jade (Economics)
Malan, Anieka (Economics)
Mama, Mlungisi Lungile (Agricultural Economics)
Mashatola, Ngoako Japhta (Industrial Psychology)
Mazwai, Osagyefo Mikateko (Economics)
Melonas, Michail Christiaan (Mathematical Statistics) (*cum laude*)
Meyer, Nicholas George (Mathematical Statistics) (*cum laude*)
Millar, Jamie (Economics)
Mokobane, Sechaba Tshepo (Economics)
Mpeta, Bokang (Economics)
Mtembu, Trishia Thokozile (Transport Economics)
Nambandi, Maria Ndinelago (Statistics)
Nkosi, Nolwazi Bernice (Economics)
Olds, Timothy Alec (Economics)
Shatiwa, Tangeni Sindano (Economics)
Sigwela, Thabisa Annita (Industrial Psychology)
Skoric, Georgjje (Economics)
Smit, Yvonne-Louise (Industrial Psychology)
Solomon, Tracey-Lee (Economics)
Swanepoel, Roedolf Johannes (Computer Auditing)
Swelindawo, Lunga (Economics)
Van Eck, Petro (Economics)
Van Heerden, Kyle (Operations Research) (*cum laude*)
Van Niekerk, Francesca (Financial Risk Management)
Van Zyl, Petro Elsje (Industrial Psychology) (*cum laude*)

Magister in die Wysbegeerte Master of Philosophy

Angula, Elina Nekefo Ngondyodhi (HIV/AIDS Management)
Baijoo, Altesh (Futures Studies)
Blaauw, Andre Duncan (Management Coaching)
Breed, Barend Christiaan Alberts (Management Coaching)
Cain-Dlamini, Suzette Neonore (Management Coaching)
Cruywagen, Michelle (Sustainable Development Planning and Management) (*cum laude*)

Cwayi, Siphumeze (Futures Studies)
Day, Mark Alexander Fitzgerald (Sustainable Development Planning and Management) (*cum laude*)
Dinake, Amos Tiro (HIV/AIDS Management)
Gakkhar, Sudhir Kumar (HIV/AIDS Management)
Iiyambo, Amalia Nuugwanga (HIV/AIDS Management)
Jones, Louise Frances Tudor (Sustainable Development Planning and Management) (*cum laude*)
Kaimenyi, Ann Gacheri (Sustainable Development Planning and Management)
Kanhukamwe, Charity (HIV/AIDS Management)
Kaonde, Eusteria Mwaka (HIV/AIDS Management)
Katz, Sheila Margaret (HIV/AIDS Management)
Kumm, Jacqueline Helena (Management Coaching)
Lesoli, Palesa Paulina Teboho (HIV/AIDS Management)
Liphoto, Mosili Jacqueline (Sustainable Development Planning and Management)
Lulendo, Weko Gomer (HIV/AIDS Management)
Magan, Jiten (Sustainable Development Planning and Management) (*cum laude*)
Mahamo, Lerato Agnes Sabina (Sustainable Development Planning and Management) (*cum laude*)
Mancebo Masa, Elena (Sustainable Development Planning and Management) (*cum laude*)
Manguwo, Liveson (Sustainable Development Planning and Management)
Mdlalose, Gcinekile Fihliwe (HIV/AIDS Management)
Mthiyane, Thobile Adrian (Environmental Management) (*cum laude*)
Mvelo, Asanda (Futures Studies)
Naidu, Tredeshnee (Environmental Management)
Ndaba, Vusi (HIV/AIDS Management)
Ndwandwa, Sazi Asanda (Management Coaching)
Ngairo, Fillimon Vejama (Management Coaching)
Ngende, Virginia Apandju Osako (HIV/AIDS Management) (*cum laude*)
Ramsewak, Seema (Management Coaching) (*cum laude*)
Rightford, Brett Warwick Bevan (Sustainable Development Planning and Management)
Saban, Yumna (Management Coaching)
Scott, Kelly (Sustainable Development Planning and Management) (*cum laude*)
Shabodien, Rosieda (Management Coaching)
Shale, Veronica Kojang (Management Coaching)
Sibanda, Khethukuthula (HIV/AIDS Management)
Swart, Jacobus Frederick (Management Coaching)
Tsolo, Maithabeleng Litallo (HIV/AIDS Management)
Van der Merwe, Wehncke Viljoen (Environmental Management)
Van Wyk, Sonya (Management Coaching)
Visser, Beryl Louise (Sustainable Development Planning and Management)
Xaba, Ngaka Doctor (HIV/AIDS Management)

Magister in die Wysbegeerte in Ontwikkelingsfinansies Master of Philosophy in Development Finance

Bisamaza Bagubwagye, Belinda Philippa
Chitete, Mubanga Yvonne Mukuka
Geh, Samuel Wonyen
Hlungwani, Siphon Lawrence
Jolisa, Thembele Perfect

Mahindi, Veneranda
 Mamogale, Dire Lucas
 Manyike, Godfrey Tsakani
 Mashiane, Eleanor
 Matabiswana, Sisa
 Mavuka, Sibonakaliso Signal (*cum laude*)
 Maxon, Mziwoxolo Israel Christopher
 Mgobozi, Thobeka Patience
 Mkhwanazi, Nobantu
 Mudau, Ndidokunda
 Muzepe, Samueline
 Ndanga, Alfonse
 Ndhlovu, Richard
 Ndlovu, Nomfundo
 Ndzelu, Lihle
 Ngeno, Lindiwe
 Ngwenya, Nongcebo Sandra
 Ntlamelle, Tshepo
 Pholi, Ndulamo
 Pienaar, Johannes Hendrik
 Ramawela, Manti
 Russell, Ernest Motlatsi
 Shilunga, Emeritha Mwarurirandje Kaamushaagumbo
 Shongwe, Siphwiwe
 Sichuundu, John
 Smith, Martin Eugen
 Van Staden, Kyle William
 Yambesi, Caroline George (*cum laude*)
 Yeboah-Asuamah, Nana Yaw
 Zana, Deborah Colleen

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

Adams, Claire-Louise
 Adams, Olivia Fiona
 Adriaans, Nico Shaun
 Agnello, Franco Vincenzo
 Amutenya, Lydia Ndapandula
 Ashikoto, Victor Omuwetuna
 Augustyn, Tiaan
 Bangani, Siyandiswa Junaitta
 Bavuma, Phumza Elaine
 Bhamjee, Mobeen
 Blanckenberg, Natasha Dawn (*cum laude*)
 Blignaut, Robert William Chapman
 Brand, Albert (*cum laude*)
 Brits, Emmica (*cum laude*)
 Broderick, Claire Robyn
 Burger, Du Toit
 Burger, Handri
 Burger, Rehan Leonhardt
 Buys, Davida Angela (*cum laude*)
 Buys, Jozua Petrus Joubert (*cum laude*)
 Cassiem-Majal, Mawadda
 Chetty, Brayden
 Chipare, Israel
 Christians, Terrill-Joy Edith
 Christie, Darryll Brett
 Cloete, Oliver Lloyd (*cum laude*)
 Coetzee, Hermanus (*cum laude*)
 Coetzee, Rynhardt
 De Lange, Reinold
 De Wet, Servaas Hermanus
 Dinginya, Lawrance
 Donca, Janome
 Dreyer, Casper Becker (*cum laude*)
 Du Plessis, Daniel Gerhardus
 Du Preez, Jacques Eden

Du Toit, Andre Herman
 Du Toit, Francois Matthys
 Du Toit, Johan
 Dube, Arshilla (*cum laude*)
 Edghill, Robert Colin Henry
 Ehlers, Lizaan
 Engelbrecht, Johan Lombard
 Engelbrecht, Sybrand Abraham
 Erasmus, Johannes Jacobus
 Erasmus, Petrus Johannes
 Faure, Anelle
 Feenstra, Roelof Johannes (*cum laude*)
 Feris, Rodney Cornelius
 Flannery, Deborah Karen Stirling
 Ford, Charles Frank
 Frey, Gavin Gerald
 Gavi, Diana Rosemary
 Gebremedhin, Fundile Siphwiwe Shanki
 Gounder, Yugashan
 Govender, Nadia
 Govender, Pranavum
 Haasbroek, Francois Cornelis
 Hall, Engela Francina
 Hanyane, Elsie Bahana (*cum laude*)
 Harrinarian, Ushveer
 Hartnick, Rushana
 Heneke, Robert Xavier (*cum laude*)
 Hercules, Elvina Tanya
 Hottie, Mpho Mamotsie
 Hurst, William James (*cum laude*)
 Jacobs, Dimitri
 Jaggeth, Kapil
 Janse van Rensburg, Deon Johannes
 Jenkins, Charis Jillian
 Joubert, Heinn
 Joubert, Jane (*cum laude*)
 Julius, Elroy Peter
 Kandakuzee, Yvonne
 Kearney, Nicolaas Johannes
 Kieviet, Johan
 Kleynhans, Divan
 Kok, Esté (*cum laude*)
 Kriel, Gerbrandt Steyn
 Kroqwana, Nobambo
 Kruger, Jacob Petrus
 Lawson, Samantha Anne
 Louw, Annamarie
 Madawo, Perpetua Ropafadzo
 Madikane, Vukani Eliya
 Madondo, Judith
 Makhanya, Nomfundo
 Malatji, Prince Kgashane
 Maloo, Harsha
 Maphanga, Natasha
 Maqashelana, Mbongeni Modestus
 Mayaphi, Melikhaya
 Meiring, Jonathan Michael
 Meyers, Bradley Franklin
 Msibi, Sbhongokuhle Jeffry
 Muhl, Conrad Friedrich
 Murray, Sadia
 Naicker, Priyadarshni
 Naidoo, Ravendran (*cum laude*)
 Nchabeleng, Mathapelo Letebele
 Nel, Christian Pascal
 Ngema, Sifiso
 Nkambule, Adam Charles
 Nkhahle, Seana
 Ntombela, Isabel Siphesihle

Ntsho, Ayanda
 Ntsiki, Jonas Moseli
 Ochse, Jessica Denise
 Orton, Samuel Joseph Charles
 Padayachi, Nadia
 Parshotam, Anup Indravadan (*cum laude*)
 Phamotse, Mokoto Emmanuel
 Radel, Kai Emil (*cum laude*)
 Railo, Ngoako David
 Ramathavha, Mpho Fancy
 Saliem, Amina
 Scheepers, Ruben
 Schwartz-Clausen, Selma Sisi
 Seedat, Salma (*cum laude*)
 Senekal, Trevor
 Shayanowako, Vimbai
 Shiluvana, Jimmy Selbourne
 Shipingana, Wilhelm Uushona
 Shoba, Nkosinathi Presgod
 Simelane, Nosipho
 Singh, Raneel Mansingh (*cum laude*)
 Singh, Shanay (*cum laude*)
 Smith, Lauren Ann
 Snyder, Kehad Jetro
 Solomons, Nichole
 Stadler, Corrie
 Stamper, Pumla
 Steyn, Ruan
 Stiglingh, Renke
 Stoman, Christoffel Jasper
 Strauss, Christian Jacobus
 Strydom, Jan Harm Gert
 Takacs, Steven Dominic
 Thomas, Thandulwazi Utamara
 Tukani, Lunga
 Valsassina Serra, Filipe Manuel (*cum laude*)
 Van den Berg, Dirk Johannes
 Van den Berg, Pippa
 Van den Bos, David William (*cum laude*)
 Van der Bijl, Johannes (*cum laude*)
 Van der Linde, Hendrik Stefanus
 Van der Merwe, Christo
 Van der Merwe, Martin
 Van der Merwe, Theunis Christoffel
 Van der Walt, Jacobus James
 Van der Walt, Philippus Johannes (*cum laude*)
 Van der Watt, Jacobus Petrus
 Van Deventer, Willem Adriaan (*cum laude*)
 Van Heerden, Ricus (*cum laude*)
 Van Rooyen, Catharina Maria
 Venter, Marie Michelle
 Victor, Cyril Joseph
 Viljoen, Philippus
 Wantenaar, Tanya Ilana
 Welgemoed, Corne (*cum laude*)
 Zikode, Thamsanqa Phineas
 Zwane, Sandile Bonginkosi

Magister in Publieke Administrasie
Master of Public Administration

Brown, Bradley
 Gerrans, Lorraine (*cum laude*)
 Kaoma-Sikaneta, Chibemba Hope
 Lutombi, Richard Simushi
 Maila, Z'Nakile
 Mohlala, Molebo Pretty
 Nugent, Daniel John (*cum laude*)
 Phamphe, Phanuel Milingoni
 Shilumani, Ruth

Tangang, Tangang Andrew
 Teleki, Mofihli Moeketsi (*cum laude*)
 Uusiku, Victoria Jakula

Magister in Rekeningkunde
Master of Accounting

Beukes, Wilna
 Conradie, Shaneen (*cum laude*)
 Hewitt, Mark John

Honneurs-Baccalaureus in die Handelwetenskappe
Bachelor of Commerce Honours

Bartlett, Jacques Hilton (Economics)
 Beek, Kathryn Ashley (Economics)
 Bisset, Simon Jarvis (Economics)
 Braaf, Leighton Kurtley (Management Accounting)
 Bredenkamp, Annette Corlie (Economics)
 Caldeira, Raquel Gomes (Economics)
 Cantatore, Daniela (Transport Economics)
 Chihana, Tafwirapo Shalom (Economics)
 Chikono, Ashley Sascha (Management Accounting)
 De Villiers, Christiaan (Mathematical Statistics)
 Detering, Kirstin (Economics)
 Dilley, Aedan (Economics)
 Erlank, Jan Stefaans (Management Accounting)
 Giliomee, Guillaume (Financial Risk Management)
 Goosen, Ruan Eben (Economics)
 Grobler, Michelle (Actuarial Science)
 Hands, Jozef Bevan Morkel (Economics)
 Harmse, Conrad Stefan (Economics)
 Haupt, Emma Jane (Public and Development Management)
 Henning, Danielle Elizabeth (Management Accounting)
 Johnston, Brent Kyle (Public and Development Management)
 Jones, Jacquinn Ajay Clinto (Management Accounting)
 Kemp, Marelize (Management Accounting)
 Khumalo, Yolanda (Management Accounting)
 Le Roux, Frances (Actuarial Science)
 Le Roux, Leande (Management Accounting)
 Leak, Tivan (Economics) (*cum laude*)
 Lesch, Luzaan (Economics)
 Lotter, Theophilus Casper (Actuarial Science)
 Makgabo, Thabiso Pheny Malesela (Management Accounting)
 Malan, Hercules Phillipus (Logistics Management)
 Maneveld, Jason Brian (Economics) (*cum laude*)
 Mangola, Chante Maxine (Management Accounting)
 Marais, Paul Viljoen (Transport Economics)
 Matulich, Nadia Antonette (Economics)
 Maxwell, Dylan (Statistics)
 Mkhungo, Brian Musa (Transport Economics)
 Mphahlele, Raisibe Anastasia (Management Accounting)
 Muller, Aubrey Calvin (Actuarial Science)
 Musa, Junaid (Management Accounting)
 Muzanenhano, Jennipha Rutendo (Management Accounting)
 Mzondo, Unarine Shonky (Economics)
 Naude, Marguerite Francoise (Business Management: Marketing Management)
 Nunn, Aidan John (Statistics)
 Phasha, Tsatsi Golden (Public and Development Management)
 Potgieter, Deon (Actuarial Science)
 Potgieter, Nathan (Economics) (*cum laude*)
 Renner, Andrea Karoline (Economics) (*cum laude*)
 Rossouw, Etienne Johannes (Industrial Psychology)
 Scholtz, Jenny (Economics)
 Semanya, Ireen (Economics)
 Swart, Lana (Management Accounting)
 Thiart, Nicola (Management Accounting)
 Van der Merwe, Hendrik Petrus (Financial Risk Management)

Van Waart, Christiaan (Management Accounting)
Van Zyl, Suné (Public and Development Management) (*cum laude*)
Visser, Michiel Van Breda (Economics) (*cum laude*)
Witthuhn, Keiran Ferdinand (Economics)

**Honneurs-Baccalaureus in die Handelwetenskappe in
Informasiestelselbestuur
Bachelor of Commerce Honours in Information System Management**

Fraser, Sally Jean Alice
Rabe, Ryan
Van Staden, Indurain Jostein

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

Abrahams, Zaileen Abigail
Adams, Shanaaz
Africa, Sidney Walter
Beukes, Valencia Pamela
Block, Stephan
Britz, Liesl Dawn
Brown, Marsha Bernidet
Brown, Shaun
Campher, Chanel Raylene
Chimuka, Absalome
Cwaile, Natalie-Carol Koketso
Duma, Muzi Joseph
Giyama, Lwando
Gonya, Andiswa
Grobler, Camelia
Hendricks, Leigh
Hendricks, Ronda Joy
Jozana, Nwabisa Cecilia
Kapenda, Johanna Shatumbu Tumangulula
Kinniburgh, Gina Lynne (*cum laude*)
Longo, Paul Lebuhang
Mabija, Nontsikelelo Happiness
Magjja, Nondumiso Faith
Maseko, Friday Solomon
Maswanganyi, Stanley N'angamuni
Matiwane, Mbadu
Mdede, Mnoneleli
Mdluli, Jan Vusumuzi
Meyer, Melanie
Mhlontlo, Mawande
Mhlungu, Nokuzola
Miller, Carl
Mngomezulu, Dawn Nontuthuzelo
Mngomezulu, Salakwande William
Moremi, Kabelo Emmanuel
Mpiti, Nthadi
Mtsweni, Doctor Patrick
Ngalo, Carmichael Nkululo
Ngamlana-Jara, Noloyiso Catherine
Ngcobo, Wiseman Gcizelela
Ngomani, Noluyolo
Nkhoma, Kisa
Ntshanga, Pholisa Sinike
Petersen, Selvyn
Pieters-Schoeman, Nolene Fredricka
Plaatjies, Cambell Gerald
Robertson, Crystal Florina (*cum laude*)
Sakathi, Thembelani
Sambo, Ruwayda
September, Julia Melicia
Shabalala, Siphon Benson
Sigenene, Dumisani Advocate
Sishi, Thembile Confidence

Sodladla, Nyameko
Sonnenberg, Melanie
Tiongco, Catherine
Tlale, Getrude Winnie Moipone
Tlhapane, Beverly Sebolelo
Valentine, Lindy
Xulubana, Khunjulwa Antonia
Zozi, Siyamcela

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

Abrahall, Kristin Nicole
Adams, Munibah
Alexander, Cailan
Berry, Sidney
Bester, Marko
Brown, Joseph Arthur Walter
Buck, Murray Ian Allan
Burger, Danielle
Burger, Karen Anneke
Byrne, Nicola Myra
Carstens, Kyle Edwin
Cilliers, Andreas
Claasen, Matthew Peter
Coetzee, Lize
Coetzee, Louis Jacobus
Davenport, Stanley Bennett
Davids, Hamidah
De Nysschen, Dylan
De Vos, Celine Kay
De Wet, Greta
Du Plessis, Stephanus
Firth, Gene Louise
Gerber, Sasha-Lee
Giles, Michelle Louise
Green, Sarah Joy
Heydenrych, Veronique
Hibbert, Kyle Thirkell
Jacobs, Melanie Lynne
Julies, Jamie-Lee
Kangumba, Keveumine Mgonry
Knight, Ruan
Koeries, Duaine Nathan Roland
Kunene, Nomalungelo
Le Roux, Corne
Letschert, Joshua
Lombard, Christoffel Benjamin
Lourens, Reece
Mabongo, Lolwethu
Maré, Shaen
Mars, Marlon Allan
Martin, Damian Roy
Mitchell, Olivia Penelope
Momin, Toshief
Myburgh, Marius
Neilon, Sabrina
Petersen, Lucille Odelia
Phalatsi, Tshepo Kgotso
Pieterse, Renier Johannes
Pillay, Simone Chantel
Prior, Jason
Punt, Ludwig Christiaan
Radbone, Abigail
Ramere, Mapule Dorah
Raynard, Joshua David
Roman, Matthew Daniel
Searle, James Matthew
Sibanyoni, Ntokozo Hlengiwe

Sita, Vladislav Tafara
Smit, Maatje Gertruida
Smith, Lauren Louise
Steyn, Jandre
Steyn, Tayla Chloé
Strydom, Tania
Swanepoel, Anton
Theron, Charl Christiaan
Truter, Denise Eileen
Tshaka, Keitumetse Lesego Eva
Van De Vyver, Robyn
Van Eck, Richardia Alice
Verster, Max Harry
Viljoen, Shene

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

Cilliers, Jacques
Wiehman, Emma Annette
Wilson, Lawrence Lesley

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

Awases, Zenzi Natasha
Baldwin, Ashley Amy (*cum laude*)
Behrens, Johan
Beyers, Henrico
Bosman, Christiaan Jacobus
Brink, Melonie Joy
Christie, Ralph Celt
Crouse, Jean-Dré Jb
Daniels, Shaam
Davids-Phillips, Kelly Rose
De Villiers, James Malherbe
Dibakoane, Murendiwa Jeany
Diergaardt, Vincent Jaun
Dirkse van Schalkwyk, Johannes Jurgens (*cum laude*)
Fountain, Lee Travis
Greeff, Luan Emmanuel
Haywood-Rasmus, Natasha Emerentia
Hempel, Wayne (*cum laude*)
Knight, Nico Francois
Knoetze, Chantel
Kotzé, Rolané
Le Bron, Crystal
Loff, Kyle
Maistry, Sherwynn Thavron
Malele, Nthuane Portia
Manne, Graeme Rubin
Masia, Magadima Renaulda
Masuku, Edith Prudence
Mellors-Hefer, Francois
Modise, Tebogo Wilfred
Mohamed, Luqmaan Essop
Mpiyane, Nomananda Blossom
Mthembu, Lulama Magdalena
Muller, Francois (*cum laude*)
Muller, Willem Hendrik Boshoff
Mupurua, Nguundja
Mutombo, Kalengay Cedrick
Mwila, Nana Chanda
Myburgh, Leanla (*cum laude*)
Naidoo, Duran Renato
Ndlovu, Thamsanqa
Nel, Leticia
Ngcobo, Nkosingiphile Siphukuthula
Nkwe, Johannes Malesela

Noble, Sean
Ntshiea, Maletsatsi
Oberholzer, Jacques
Pahad, Seraj
Patel, Upasana (*cum laude*)
Petersen, Dylan David
Plastow, James Sefton
Powell, Nicholas James
Radloff, Danielle
Ramoshaba, Bridget Tumelo Nono
Rossouw, Jeanne
Schreuder, Jacobus Theunis Kotze (*cum laude*)
Shayingca, Thandaza Mitchel
Smith, David Edward
Taute, William
Tsholo, Phemelo Keolebile
Udjombala, Ndapunikwa Ndesihafela Josefina
Van Heerden, Grethe (*cum laude*)
Walker, Wesley David Stuart
Zonke, Ron

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

Broughill-Dowling, Kelly-Anne
Hyson, Gregory James
Mathews-De Vries, Cindy
Reich, Savannah Paige (*cum laude*)
Van Niekerk, Johann Ernst

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

Falitenjwa, Masithandaze
Hartzer, Johannes Hendrik
Jeftha, Charity Porche
Khan, Mubarik
Kwela, Pakamile Jameson
Masigo, Lionel Percy
Mazibuko, Motshidisi (*cum laude*)
Monyane, Jeanette Dimakatso
Motona, Puleng Reuben
Murorua, Kasperienda Casey
Ndhlovu, Nthabiseng Ursula
Reynolds, Neal Alan (*cum laude*)
Serfontein, Hendricus Cornelius
Sonnenberg, Edwina Samantha
Taylor, Nicholas Sean (*cum laude*)
Tema, Mahlodi Colleen
Thee, Chriszelle Rozane
Uupindi, Dinamuene Ruben Muller
Van Heerden, Anniq
Wilken, Henning Willem Jacobus
Witbooi, Ursula Priscilla

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

Akaba, Samuel Ifeanyi
Bandoma, Bijou Limengo
Bastardo, Nádia Solange Jessen
Beyers, Belinda
Boahen-Boaten, Baffour Boaten (*cum laude*)
Booyesen, Nomalizo Thandiswa
Buthelezi, Ntombifuthi Brenda
Campson, John William
Cekwana, Nkosinathi
Cheka, Gloria Magdeline
Cloete, Charlotte

Dana, Lizela Richeol
 Daniel, Shimbi
 Daso, Celestina Bunmi
 Deku, Benedictus Wolanyo Anthony (*cum laude*)
 Del Fava-Fry, Renata Julia (*cum laude*)
 Dhansay, Muhammed Naasier
 Domela, Semangele
 Donald, Larissa Benita (*cum laude*)
 Dyosi, Zimela
 Ekitahuka, Kongeyami Samuel
 Fadana, Nasiphi
 Gemashe, Ziyanda
 Gxakaza, Akho Portia
 Haiping, Teopolina Tuvahanga Napandulwe
 Hlongwane, Mpho Gladness Constance
 Jacobs, Selokela Bridget
 Kachenga, Meyan
 Katupao, Melissa Veronica Petronella
 Kazangba, Sandro Nzambe
 Khumalo, Alfred Sphiwe
 Khumalo, Ntombizinhle Bonakele
 Khumalo, Thabile Lungile
 Kramer, Mercia Virginia
 Lebethe, Anne
 Lebitsa, Mantahli Eliza
 Lechuti, Monei Rebecca
 Lethobane, Mponeng
 Mabuto, Mongesi Elias
 Madiga, Mmatshepho Pheladi Lucinah
 Madondo, Nonkululeko
 Mafhungo, Tshilidzi Monica
 Magwaza, Nontobeko Ntombizamaqili
 Mahapang, Maleshoane
 Majwede, Jaliswa Angelinah
 Makanda, Ma Lubasu Hugues
 Makhetha, Masentle
 Makutla, Sebitiea
 Mambera, Ellen Nyaradzai (*cum laude*)
 Masamba, Shimba Allan
 Maseko, Zanele Sue-Ann
 Mathebe, Lebogang
 Matlholwa, Constance Mmanakedi
 Matolo, Motsitsili Joyce Khesa Matlotliso
 Mbana, Anathi
 Mbinga, Epafra Atty
 Mbvundula, Francis
 Mdenene-Hompa, Nosifundo
 Mdleleni, Zanele
 Mingi, Miala
 Mkandawire, Winnie Clara
 Mkhize, Ntombenhle Prisca
 Mkhize, Rebecca
 Mkhwanazi, Thobeka Nonhlanhla
 Mlanjeni, Lungelwa
 Mntungwa, Mthokozisi Vincent
 Moalosi, Bagele Bagirl
 Mokae, Tshupo Jolty
 Mokoena, Maserame Candy
 Mokomele, Lerato Mmanamane
 Molahlehi, Matsolo Edlett
 Mompe, Atlang (*cum laude*)
 Monga, Diese
 Monyai, Mapula Sinah
 Moshane Mphuthing, Selloane Amelia Moshane Mphuthing
 Msampha, Gillian Angufana
 Msomi, Thabile Carol
 Mtshagi, Mandisa
 Mudau, Ashley
 Munkana, Barthelemy Matadi

Nakambale, Hilma Nambili
 Nakanyala, Eino Hafeni
 Ndhlovu, Debra
 Ndlovu, Nicolaide Nomzamo
 Ndlovu, Nolwazi Josephina
 Ngam, Cebo
 Ngema, Silindile
 Ngubane, Hloniphile Bridget Ntombizonke
 Nhlapo, Ntombilezi Maude
 Nkoana, Khalangani Gusta
 Nsakadi, Tina Clementine
 Nsakala, Bienvenu Lengo
 Ntoi, Kekeletso Archiebold
 Ntombela, Siphakanyiswa Mdumiseni
 Ntsie, Mabokang Grace
 Nyathi, Nonku Anastacia
 Nyengera, Richard-Tirivanhu (*cum laude*)
 Pekile, Bernadette Mahlape Matlelima
 Phatshoane, Julia Dipuo
 Poniso, Rachel Mwaka
 Prinzensky, Lee-Anne Elizabeth
 Qhobela, Refiloe
 Ragas, Brian
 Ramadan, Mundelengolo Deogratias
 Ramawela, Nobesuthu
 Romero Gonzalez, Juan (*cum laude*)
 Runu, Xoliswa Monica
 Schoeman, Elden Nico
 Sekatle, Seithati Hyacintha
 Shabangu, Zwelisha Halalisani
 Shange, Ayanda Ntombifuthi
 Shawa, Janet
 Shipena, Genesis Ndinelago Magdalena
 Shithigona, Ermelinde Ndinelango Tuyoleni
 Shomang, Dikeledi Mirriam
 Sihlangu, Alshandrinah Ngabisa
 Silumesi, Sepiso
 Simelane, Phindile Temaswati
 Sindane, Noluthando Siphumelele
 Soni, Khayaletu
 Stokwe, Nondyebo Patricia
 Tesele, Patricia
 Tshangela, Khosi
 Tshiakambila, Mputu Eunice
 Tshinanu, Bulungu Martine Beia
 Ulana, Vuyeka
 Uri-Khob, Gerson
 Vilanculos, Fausto Rafael
 Xhanti, Siphesihle
 Zitha, Khomotso Joy
 Zondi, Ntobeko
 Zulu, Ntombenhle Florence

Nagraadse Diploma in Omgewingsbestuur
Postgraduate Diploma in Environmental Management

Chuene, Samuel Karabo
 Dlamini, Thobeka Nosizwe
 Kapazu-Muhaindjumba, Alma Sukonaa
 Makapela, Gcobisa
 Mcitakali, Anathi
 Ngqulunga, Nobuhle

Nagraadse Diploma in Ontwikkelingsfinansies
Postgraduate Diploma in Development Finance

Khanyile, Noluthando Lillian
 Kobue, Morwa Bertha
 Mama, Nolwandle Mickey

Matasane, Nketsi Elisa
Mdandalaza, Zuko Ludwig
Mohulatsi, Sinah Matshidiso
Pule, Mapule Puleng
Qitsi, Ziqelekazi
Sehume, Modiehi
Seshibe, Mosima Harriet
Tshefu, Nolitha
Tshongweni, Siviwe
Tshotsho, Bunono

Nagraadse Diploma in Projekbestuur
Postgraduate Diploma in Project Management

Akwenye, Andeline Ilongeni
Beale, Rebecca Jayne
Benkenstein, Heike (*cum laude*)
Butaumocho, Mollyn
Conrad, Abdul Ganief
Cornelissen, Grant
Davids, Wayne Alvin
Dinish, Pedro
Dlamini, Welcome Mthokozisi
Du Preez, Mark Matthys (*cum laude*)
Dunjana, Bulelani
Fakude, Sibusiso
Geyser, Rudolf
Govindasamy, Ashton Durant (*cum laude*)
Gqoboka, Tokozile Cwayita
Joubert-Burger, Marinice
Kaukungwa, Laina Ipopyakailishimwe
Khoza, Nathaniel Sibusiso Lindokuhle
Lowman, Bradley John
Maartens, Petrus
Macubeni, Nompumelelo Precious
Magqabi, Fortune Wonga
Majola, Gloria Ntombifuthi
Makhotla, Noosi Nehemea
Marais, Justin Vaughn
Matsapola, Phaswane Meshack
Mkosi, Daluxolo
Mokoena, Bokang Ignatius
Mphahlele, Aubrey Austin
Nangolo, Julia Nelao
Ntozo, Sandise
Rakoma, Silukela Patrick
Ruiters, Rozethar Emily
Sadiki, Ndavheleseni Jeffrey
Salie, Fatima (*cum laude*)
Scholtz, Jacob Salmon
Shalimba, Shishiweni Sox Sagaria
Smit, Wayne David Anthony

Soga, Brian Sabelo
Sprout, Bianca Nicole
Taylor, Colin Paul
Tisani, Hlalanathi Elvis
Tshoko, Asanda
Walters, Marlo

Nagraadse Diploma in Toekomsstudie
Postgraduate Diploma in Futures Studies

Bezuidenhout, Leon
Botha, Gideon (*cum laude*)
Femi-Kayode, Nneka Janine
Hilligan, Inge-Marie
Mabitsela, Makoma Ernst Paul
Mc Donald, Samantha
Sehlapelo, Martin Collin Abner Mmapeteke
Stoker, Pieter Helenius
Tshazi, Mlungisi Patrick
Van Niekerk, Toni

Nagraadse Diploma in Vervoer en Logistiek
Postgraduate Diploma in Transport and Logistics

Maheso, Liana Letabo

Nagraadse Diploma in Volhoubare Ontwikkeling
Postgraduate Diploma in Sustainable Development

Alimohammadi, Shawn Shayan
Baxter, Janet (*cum laude*)
Dlakavu, Anita Sinazo Nokuthula
Garbutt, Paige Marie (*cum laude*)
Malebo, Edgardale Tumelo
Manda, Duduzile Eunice
Mccarthy, Megan
Mohlmonyane, Unice Digwai
Muhl, Justin Nevin (*cum laude*)
Pearse, Emma Nicole
Ramuhulu, Avhakholwi Idah
Tendaupenyu, Rumbidzai

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

Baccalaureus in die Handelswetenskappe
Bachelor of Commerce

Abbas, Laylaa
Abbott, Jason Trevor
Abdul Majeed, Nadir
Ackermann, Marguerite
Adonis, Aa'ishah
Allschwang, Sabrina Pamela
Anticevich, Dean Michael
Aras, Berna
Arendse, Melissa Simone
Avenant, Armand Paul
Baatjies, Paul Jean
Banda, Gugulethu Yvette
Banfield, Justin Craig
Barnes, Rayarn Jared
Barrett, Daniëlle
Barth, Craig Charles
Bastiaanse, Cornél
Beal-Preston, Jessica Sarah
Beck, Darian
Benson, Sean
Berry, Aerin Jade
Beukes, Lara
Beyers, Christiaan Pieter De Leeuw
Bezuidenhout, Reece Shaun
Blewett, Kayla Marie
Boddenberg, Mia Gerda
Booyens, Angelique
Bosman, Lisa-Marie
Botha, Heinrich Frederick
Botha, Jarrad Hurwitz
Botha, Karl
Botha, Sabina Yasmin
Bothma, Christiaan Cornelius
Boyce, Justin Michael
Braithwaite, Jeremy William
Brand, Michael Charles
Brauteseth, Joshua Mark
Brits, Charl Michael
Burger, Roelof Erasmus
Cameron, Peter James
Canham, Hayden South
Chambers, Ian Frank
Charumbira, Ashley Tatenda
Chinaka, Kelvin
Chitepo, Marvin Kudzanayi
Christiansen, Corinne Sophie
Claassen, Dominique
Cloete, Doulan Ricardo
Cloete, Liam Mathew Beaumont
Cloete, Willdrey Giovanni
Coetzee, Elma
Compion, Christian Johan
Corbett, Thomas
Coulson, Laura Jane
Crafford, Christiaan
Crockart, Robert
Cuyler, Ross Drummond
Da Silva Faria, Nelio Fabio
Da Silva, Louwrens Marthinus
Darroch, Michael James
Davids, Melissa
Davies-Webb, Riaghan
De Beer, Megan Michelle
De Beer, Michelle
De Clercq, Nicholas
De Jager, Lodewyk Matthew
De Jongh, Kyla Alexian
De Kock, Damon
De Villiers, Jacques
De Villiers, Loreen
De Wet, Jan Daniel
De Wit, Anri Suzette
Deelman, Vicky-Lee
Demetriou, Nicholas
Denner, Desiree
Di Marco, Alex
Dias, Gabriela Da Costa
Diener, Marieke
Douglas, Jacobus Lodewicus
Douglas, Julia Elizabeth
Du Plessis, Anna-Mart
Du Plessis, Anya Linda (*cum laude*)
Du Plessis, Jacques Paul
Du Plessis, Phillip
Du Plessis, Willem Adriaan
Du Preez, Grant Orin
Du Toit, Carinda Corlia
Du Toit, Mariëlle
Du Toit, Melandie
Dunbar, Matthew Gage
Duthie, Reece James
Ederies, Quanita Leilah
Eksteen, Aletta
Ellström, Anders Erik Gustav
Els, Carla
Els, Raymond
Embling, Alexa Jane
Engelbrecht, Kyra
Engelke, Nina
Essa, Mika'eel
Fauel, Charles Peter Maximilian
Froelicher, Miles Stephan
Gace, Wesley Keith
Gaeses, Kenewang Kinte Juliene
Gihwala, Neha
Goble, Kirsten Ann
Goncalves, Cristina
Gordon, Sarita
Govender, Merson Chris
Greveling, Saskia
Grieve, Douglas Andrew
Groenewald, Tertius Adriaan
Groenewald, Toni Keesha
Groom, Keaton Noel

Gryffenberg, Jacob Hermanus Jacobus
Gumbi, Fanyana Mduzuzi
Haine, Ross Kenneth
Haines, Grant William Frank
Halstead, Jason John
Hardine, Zoey Trish
Harris, Neil
Hawken, Rhys
Hayes, Michael-John
Hein, Raurie Dustin Michael
Hellmann, Karl-Heinz
Henn, Lisa
Heystek, Andries Stephanus Lourens
Hill, Sebastian Scott
Hird, Jack
Hislop, Claire Georgina
Hlwatika, Mandla Khuhle
Hoatson, Ami
Hobbs, Suegnet Tanisha
Hoffman, Izak Jacques
Huisamen, Anthony Benito
Humphreys, Erin Austin Conwill
Hunt, Dustin Joel
Hunt, Ryan Jordan
Hurter, Douw Anton
Hurter, Herman Daniël
Hyde, Stuart Patrick
Ignatus, Lucy
Ismail Patel, Azrah
Jabiro, Emmanuel
Jacobs, Ehren Ethan
Jacobs, Nadia
Jamieson, Jessica
Janse van Rensburg, Charles
Janse van Vuuren, Michael Ross
Jansen van Rensburg, Melissa
Jansen van Rensburg, Sybrand
Johns, Tristan Alec
Johnson, Camilla Anne
Johnson, Liam Rory
Johnstone, Joshua Henry
Johnstone, Sherry Frances
Jones, Lekeata Jobeth
Joseph, Demi
Joseph, Lyle Kirsten
Joubert, Jacobus Marthinus
Joubert, Johannes Jakob
Joubert, Sean Andre
Joubert, Tarryn Jade
Kakuenje, Vejama Rikareree
Kellerman, Marezaan
Kleynhans, Theodora Mieke
Kluyts, Shane Hendrik
Knowles, Cameron Stuart
Kotze, Ryno Jacobus
Kotzee, Aerin Caris
Krause, Stefanus Johannes
Kruger, Angelique
Kruger, Petrus Cornelius
Kwak, Jun-Ha
Laka, Lerato Lethabo
Lakin, Carly
Lammerding, Amike Hildie
Laubscher, Leonette Dalene
Le Roux, Herschel Brothwin
Leaser, Jody Ray
Leibrandt, Daylan
Letsoalo, Naledi Edith
Liebenberg, Inge

Liebenberg, Willem Albertus
Lifschitz, Danielle Jhanna
Lite, Daylan Branden
Liu, Jiahao
Lock, Jan-Louis
Loggenberg, Julian Sandro
Loots, Catharina Elizabeth
Loubser, Everhardus Johannes
Louw, Jane Adelheid (*cum laude*)
Louw, Joan
Ludick, Brandon
Luppnow, Jordan Kayley
MacKenzie, Angus Peter
MacNab-Holding, Cuan Selkirk
Mahwiliri, Mmadiawetsa Marvin
Makuwaza, Takudzwa Ronald Kudzai
Malan, Roelou Barry
Managa, Rudzani
Manolis, Ledo
Maposa, Charmaine Kudzaishe
Maritz, Annerita
Masinge, Mikateko Faith
Masuku, Nothando Thandeka
Mathunjwa, Sinethemba Musawenkhosi
Matthee, Nicole Tamsin
Mc Gregor, Sabine
Mc Mahon, Jordan
Meek, Caroline
Meier, Rozelle
Meyer, Anton Michael
Meyer, Ashleigh Ann
Meyer, Jakobus Christiaan
Meyer, Nicola
Mgobozi, Phindile Lungile
Minen, Thurlo Shane
Mitchell, Jarrod John
Mkhabele, Nkensani Keneth
Moche, Katlego
Moir, Georgia Janice
Mostert, Melandre
Msiza, Nokuthula Michel
Mugabe, Tanatswa Natalie
Mukadam, Sumaiya Gulzar
Muller, Karla
Muller, Lorenzo Kyle
Muller, Phillip Carel
Murape, Natalie Tatenda
Mwenyo, Felicia Analdina Gustavo
Namba, Sisipho Nolumanyano
Ndzuzo, Olona
Nel, Carl Christian
Nel, Heide Sylvia
Nel, Janco
Nel, Liardus
Nel, Liche
Nel, Louis Fourie
Ngwenya, Thembeka Precious
Nicholas, Luigia Michea
Nortje, Daniel Johannes
Norval, James Francis
Nyakoty, Tanaka Nigel
Odendaal, Lara
Olbrich, Gabrielle Anne
Olivier, Leslynn Carol-Anne
Ooka, Bijal
Oosthuizen, Lauren
Outram, Travis Edmund
Overmars, James Robert
Owen, Matthew Wynn

Pacheco, Sabrina
Pansegrouw, Ruan Johan
Passerini, Matteo Guglielmo
Paul, Rene Lauren
Pedersen, Cameron
Pedlar, Victoria Alexis
Philander, Jordan Jade
Pickard, Kate Emily Cornwall
Penaar, Marthinus Theunis Steyn
Poole, James Gordon
Potgieter, Charissa
Potgieter, Shane Derek
Pretorius, Ichte Amanda
Pretorius, Marcell
Priemsch, Filippa Leocadia
Prinsloo, Zander
Purchase, Michael Andrew
Puttergill, Andrew Bruce
Rajah, Elizabeth Kathleen
Rippon, Hannah
Rodrigues, Marcus Robert
Rohlandt, Simoné
Rossouw, Hendrina Elizabeth
Rossouw, Jonathan Craig
Rossouw, Leon
Ruby, Claire Frances
Rusenene, Michelline Audax
Saunders, Joel Lance
Schnackenberg, Heinrich Christiaan
Schnehage, Eric
Scholtz, Tiaan Fourie
Schouten, Martin Oliver
Schreuder, Bianca
Schwarte, Luca
Sejosengoe, Koketso
Shean, Adam Erni
Sherriffs, Keegan Selous
Singh, Tiara
Slabbert, Johandré
Smith, Anelisa
Steenkamp, Shaun Francois
Stevens, Jadon Stuart
Stevens, Lauren
Stofberg, Arnoldus Jacobus
Struan-Robertson, Emma
Strydom, Joshua Luke
Strydom, Line (*cum laude*)
Swart, Henlo
Tandau, Rosalyn Alice
Terblanche, Stephan Daniël
Thompson, Tyrone Jack
Thornton, Michael Robert
Thornton-Dibb, Charles Robert Dawson
Toich, Kiara Nicole
Traut, Nicholas
Tredoux, Caitlin Dawson
Troy, Mark Patrick
Turner, Emma Rose
Tyack, Blake Eric
Uys, Nathan Ralph
Valentine, Matthew
Van As, Regan Tao
Van der Merwe, Frederik Petrus
Van der Merwe, Johan Philip
Van der Merwe, Kate Helen
Van der Veen, Mieke
Van der Vyver, Nicolene
Van der Westhuizen, Jandre
Van der Westhuizen, Tian Nicolaas

Van Dyk, Wilmari
Van Heerden, Cornelius Ignatius
Van Heerden, Mabette
Van Huyssteen, Ross Jarryd
Van Jaarsveld, Johanna
Van Leeuwen, Kyle
Van Niekerk, Cherise
Van Niekerk, Lourens
Van Niekerk, Senaé
Van Rhyn, Ernst
Van Rooyen, Mia
Van Rooyen, Renecia
Van Rooyen, Vianca Gluweinisha
Van Schalkwyk, Stephan
Van Tonder, Cole Duane
Van Wyk, Kayelene Allison
Vega, Maria Emilia
Velissariou, Alexander George
Venter, Kalyn
Venter, Nicola
Venter, Rudolf Arnold
Viljoen, Nicholas
Viljoen, Zinia
Visser, Dewald
Von Ahlften, Edela
Vorster, Helga Elizabeth
Vougdis, Pericles George
Warmback, Ciaran Anthony
Watkins, Brandon
West, Paul Hugo
Weyers, Cara
Weyers, Matthew James
Wiehahn, Erich Andre
Wiesner, Keagan Ross
Williams, Alexander John
Wright, Cullen Denis

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

Botha, Andreas Philippus
Filippi, Stefano De Villiers (*cum laude*)
Grosche, Stefanie
Haupt, Lauren
Lubbe, Juan Jacques
Mars, Inès
Penaar, Shani
Rossouw, Carina
Rothmann, Adriaan Bouwer
Saaiman, Paul Barthlomeus
Smal, Izelle
Van Heerden, Tristan Japie
Van Wyk, Francois Pieter Retief

**Baccalaureus in Rekeningkunde
Bachelor of Accounting**

Abrahams, Fatiema
Antrobus, Campbell Stephen
April, William
Atkinson, Christopher Michael
Atkinson, Mikhail
Attlee, Ceelan Wendl
Augustyn, Stephanus Marius Ferdinand
Badenhorst, Hans Jurgen
Barbieri, Matthew Manrico
Barnard, Robyn Alexandra
Basson, Jan-Hendrik Hofmeyer
Basson, Pieter

Baxter, Shalize Jodene
Behrens, Candice Diandra
Bernard, Pieter-Ben
Bester, Johanna Catharina
Bezuidenhout, Magaretha Anna
Böhlke, Casey-Dee
Brewer, James David
Brokensha, Katherine
Bronkhorst, Phébé
Brooks, Kelsey Alexandra
Buchanan, Ryan
Burmeister, James Hamilton
Burmeister, Ryan Michael
Cahill, Alex
Callaghan, Matthew James
Chemaly, Matthew John
Chen, Kai-Hsiang
Christodoulou, Andreas Dimitri
Cilliers, Nicolas James
Classen, Wiedaad
Cloete, Jamie-Lee
Coetzee, Cornelis Jacobus
Cooper, Matthew Neal
Cooper, Nicola Lauren
Creighton, Mariam
Crewe-Brown, Shaun
Croshaw, Luke David Penton
Cyster, Caryn Kaylyn
Dahl, Matthew Jon
Daniels, Danielle
Davids, Jason Theodore
Davids, Yusrah
De Agrela, Bronte Naomi
De Kock, Alexander
De la Harpe, Fritz Mangold
De Nysschen, Justin
De Villiers, Karla
De Villiers, Robert Andrew
De Vos, Michael David
De Wet, Kyla
Delle Donne, Matthew
Dietrich, Abigail
Downey, Justin Dillon
Du Toit, Anja
Du Toit, Theunis Gerhard
Duister, Emeleo Dennis (*cum laude*)
Edwards, Ross Andrew
Eggers, Saskia
Eichner, Thomas Luke
Elliott, Jared Gordon
Engelbrecht, Crismar Deon
Engelbrecht, Jacobus Adriaan Albertus
Engelbrecht, Jessie Tarryn
Epler, Marc
Fechter, Louis Michau
Ferguson, Laura Jade
Fleischhauer, Konrad Rossouw
Fleischhauer, Reuben Owen
Fortuin, Amber Whilline
Fourie, Jessica
Fourie, Louis Philippus
Fraser, Christian Peter John
Frew, Oliver Daniel
Ganda, Sibahle
Ganief, Mu'izz
Garces de Gois, Leliana Marita
Garrod, Ethan
Geldenhuis, Anette
Geldenhuis, Bernardt

Geldenhuis, Nandi
Gericke, Hercules Viljoen
Goble, Frank James
Goolam Mahomed, Nabeel
Gordon, Reece Thomas
Gounden, Jeremy Jason
Gqiyaza, Akhona Jonathan
Green, Carli
Grobbelaar, Christiaan Johannes
Groenewald, Micaela Emily
Gumede, Minenhle Bright
Haasbroek, Gideon Daniel
Hay, Helana
Henn, Tania Robin
Henning, Lennert Altus
Heron, Kate Jeanne
Hitchins, Aaron Daniel
Holesgrove, Megan
Hope, Cameron James Kerr
Horn, Johann Heinrich
Howell, Megan Elizabeth
Hulme, Vehon
Ismail, lemraan
Janse van Rensburg, Christi
Jansen, Deswynn Jonathan
Jansen, Zirk Bernard
Jennings, Megan Lee
Jonck, Demi
Jonkers, Tenielle Amber
Jordaan, Anria
Joubert, Daniël
Joubert, Jacobus Andreas
Juries, Nathan-Lee
Kasselmann, Lawrence Ralph
Kemp, Stephen Patrick
Kidd, Anthony John
Kilbourn, Frank Wilfred James
Koch, Armand Pieter
Koch, Oliver Lewis
Kok, Steffen Gerrit
Kotzé, Jan-Hendrik Hofmeyr
Labuschagne, Pieter Wilhelmus
Lambrechts, Hugo Amos
Lambrechts, Nicholas Hugo
Lamprecht, Conrad
Lancefield, Robert John
Lategan, Hugo Du Randt
Le Roux, Francois Jacques Hugo
Lester, Dane John
Lloyd, Jacques Wayne
Lombard, Dewald Johannes Louis
Louw, Dylan
Ludik, Natasja Anita
Lupuzi, Anele
Lureman, Duo Agenor
Mac Robert, Nicholas James
Maggott, Dylan
Maingard De Ville-Es Offrans, Alexandre Olivier
Major, Jonathan Hamilton
Makhathini, Vuyo Lethiwe
Makriga, Wynné Jeneveve
Malehaka, Selaelo Keneiloe
Malunga, Thulisa Justice
Maree, John Michael Harry
Marshall, Danro
Martin, Aiden Mollebaek
Marx, Lumari
Mathonsi, Ntshuxeko Patricia
Matshwane, Katlego Bernice

Mayet, Dhanya'l Abdul Khalik
Mbatha, Nozipho Nomvelo
Melville, Trafford Hugh
Meyer, Jared Michael
Meyer, Jon-Marc
Meyer, Suné
Michau, Imke
Miles, Gaby
Mindry, Jordan Jake
Mitchley, Alexandra Kate Laird
Moelich, Nicoline
Moolman, Rianto
Moss, Courtney Jane
Mottram, Tayla Jade
Munjanja, Portia
Mupfumi, Fungai
Murray, Ryan Craig
Ndlala, Siphwokuhle Luyamangalisa William
Neethling, Mieke
Nel, Johannes Jacobus
Nel, Nadine
Norris, Dylan Roy
North, David Anthony
Nortje, Jeanne
Oellrich, Karl Hans (*cum laude*)
Oelmann, Erin-Marié
Oliver, Megan
Painting, Ryan Jordan
Pelster, Nikene
Perry, Jeanri
Peterson, Reza
Philander, Aimée Jo-Ann
Phillips, Ashleigh
Pontac, Brent
Potgieter, Luke
Pretorius, Ross Alexander
Prinsloo, Pieter Clive
Putziger, Hans Philip
Raal, René
Rademan, Frederik Christian
Ramages, Ashwin Michael
Rencken, Cameron Reece (*cum laude*)
Rey, Juliette Gail
Reyneke, Adolph
Roberts, Philné
Roffey, Dayle William
Samuels, Haydan Michael
Schalkwyk, Sadie
Schleifer, Alexandra
Sendin, William Duncan
Sheik, Aminah
Sieberhagen, Marthie
Siegrohn, Taneka
Simmonds, Aaron Jesse Michael
Smith, Daniël Malan
Smith, Demi
Smith, Emilio Shurneille
Smith, Ethan Robin
Smith, Rudi
Smith, Stephen Mpho
Smuts, Megan
Soko, Albert
Stals, Reynard
Stander, Kara Mari
Steyl, Cassey-Jean
Stofberg, Monica
Strauss, Emma-Marie
Strydom, Elani
Strydom, James Robert

Strydom, Seth Daniel
Swart, Jacobus Johannes
Talmage, Tayla Anne
Taylor, Christian Llewellyn
Theron, Charlize
Thomas, Caylee
Thomas, Stuart Logan
Todd, Julia Catherine Anna
Tuneeko, Ronell Uapuikua
Turpin, Drew William Peter
Tyler, Ashtyn Paige
Upton, Cornelius Johannes
Van Deijl, Wilco
Van den Berg, Ivonne Maureen
Van der Merwe, Donovan
Van der Walt, Johannes Petrus
Van der Walt, Philippus Johannes
Van der Walt, Tarryn Brittany
Van Deventer, Ockert Francois
Van Geest, Lourens Aidan
Van Heerden, Jessica Tayla
Van Niekerk, Andrea
Van Niekerk, Jade
Van Pletzen, Inge-Marli
Van Reenen, Rachael Shannon
Van Wyk, Nathan
Van Wyk, Sune
Van Zyl, Daniel Christiaan
Van Zyl, Leandri
Visagie, Sanél
Visser, Jeanne-Marie (*cum laude*)
Visser, Stephanus Christiaan
Von Klopmann, Alexander
West, Nicholas John Ross
Whitman, Keaton Reeve
Winship, Olivia Collette
Witte, Marché
Wolmarans, Jacques Armand
Wright, Drew
Wright, Emily Jane

Diploma in Openbare Verantwoordbaarheid Diploma in Public Accountability

Abrahams, Peter Lester Wayne (*cum laude*)
Crookham, Candice Elana (*cum laude*)
Duitsjan, Eunice
Jacobs, Chantal Joy
Kader, Zaynab
Kruywagen, Fiona Debra
Matai, Bheki
Mbuyazi, Nosipho
Moses, Ricardo Vincent
Samson, Darryl Herschel
Tseuo, Palesa Thembisa
Van Tonder, Shawn Michael
Van Wyk, Ivan Reginal
Van Wyk-Pienaar, Rosaline Jenine



Fakulteit
Geneeskunde en Gezondheidswetenschappen

Faculty
Medicine and Health Sciences

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte **Doctor of Philosophy**

ACKERMANN, Christelle (Radiology Diagnoses)

Diffusion tensor imaging of the brain in paediatric HIV

Magnetic resonance imaging (MRI) is a sensitive technique for examining the brain. A component, diffusion tensor imaging (DTI), through measuring restricted diffusion of water, is especially useful for assessing white matter tracts. This study focused prospectively on HIV-positive children from the Children with HIV Early Antiretroviral (CHER) trial participating in a neurodevelopmental study. Using standard MRI, white matter lesions were detected in 50% of children, even those on antiretroviral therapy from seven weeks of age. DTI showed decreased myelination and was more sensitive than neurodevelopmental tests. It showed lesions in white matter that explained reduced visual perception.

Supervisor: Prof MF Cotton

Co-supervisor: Prof S Andronikou (external)

ADAMS, Amy Sabrina (Psychiatry)

An investigation of the relationship between PTSD, reflective functioning and caregiving sensitivity amongst mothers misusing substances

Substance use has increased significantly in South Africa and has been associated with several risk factors for both maternal and infant mental health. Given these increasing levels of substance use as well as violence exposure and post-traumatic stress disorder (PTSD) in South Africa, the main aim of this study was to explore the relationship between PTSD, reflective functioning and caregiving sensitivity among mothers misusing substances. This study revealed that there was little difference between the exposed group (participants with PTSD) and the non-exposed group (participants without PTSD) in terms of reflective functioning and caregiving sensitivity. Overall, the findings confirmed the concerning extent of substance use and PTSD pathology in the given setting. It also revealed largely poor levels of reflective functioning and caregiving sensitivity in this specific population and highlights the need for ongoing research and intervention.

Supervisor: Prof A Berg

Co-supervisor: Prof N Suchman (external)

BARNARD, Karlien (Medical Virology)

Diversity and ecology of astroviruses in South African bats

The study investigated the prevalence, diversity and ecology of astroviruses (AstV) in South African bats. AstV were found abundantly in various bat species. Maximum likelihood analysis of RdRp gene fragments suggested that South African bat AstVs are not restricted by host species' identity or geographical location. The most significant contribution of the study is the first-ever successful isolation and propagation of a bat AstV *in vitro* on baby hamster kidney cells. This paves the way for future functional and other studies. The study also gives some insights into potential One Health implications of AstV in South Africa.

Supervisor: Prof W Preiser

Co-supervisors: Dr N Ithete, Prof S Schultz-Cherry (external)

BULABULA, André Nyandwe Hamama (Public Health)

Determinants of maternal colonization with multidrug-resistant Gram-negative bacteria

This study determined the burden of and risk factors for maternal colonisation with antimicrobial-resistant Gram-negative bacilli (AMR GNB). A systematic review produced the first African prevalence estimate (17%) for maternal colonisation with extended spectrum β -lactamase-producing bacteria. In pregnant South African women, the carriage rate for AMR genes was 12.9%, with the use of communal taps and poverty-related factors predisposing to colonisation. Obstetric and neonatal ward environmental contamination with AMR genes was low (5.8%) and could not be linked to patient colonisation. A pooled AMR GNB transmission rate of 27% from colonised mothers to their neonates was established.

Supervisor: Prof S Mehtar

Co-supervisor: Prof A Dramowski

CHIRENDA, Joconiah (Molecular Biology)

Migration and spread of drug-resistant tuberculosis (DRTB) in Zimbabwe

This study examined the aimed to describe transmission of migration-related drug-resistant mycobacterium tuberculosis in Zimbabwe by describing the genetic diversity and comparing the drug-resistant M. tuberculosis strains reported in Zimbabwe's northern and southern regions with drug-resistant M. tuberculosis strains from other SADC countries using whole-genome sequencing and geographic information system mapping. The findings provide limited evidence of possible migration-related transmission in high-burden settings and may have been affected by the presence of re-infection in these high-burden settings. The study strongly recommends regional cross-border surveillance and treatment using whole-genome sequencing for diagnosis and contact investigation.

Supervisor: Dr EM Streicher

Co-supervisors: Profs S Sampson, RM Warren

CILLIERS, Karen (Anatomy)

Multi-element analysis of human brain regions

The association of trace element imbalance with HIV-associated neurocognitive disorder (HAND) has not previously been investigated. Therefore, this study investigated whether HIV status, sex and anatomical brain regions influence brain trace element concentrations. Samples collected from the caudate nucleus, putamen, globus pallidus and hippocampus of HIV-positive and HIV-negative male and female cadavers were analysed by coupled plasma mass spectrometry. Magnesium was reduced in the study population compared to literature. In the HIV-infected group, cadmium was decreased, and nickel increased. In conclusion, more research is needed to ascertain how HIV alters the brain and whether trace element therapy could improve the symptoms of HAND.

Supervisor: Prof CJF Muller

DANIELS, Lynette Carmen (Nutritional Sciences)

Support for exclusive breastfeeding in the workplace: Development of a practice model for designated workplaces in the Breede Valley sub-district, Western Cape province, South Africa

An explanatory, sequential, mixed-methods research design was employed in this study aimed to develop a practice model to support exclusive breastfeeding for working mothers from designated workplaces. The findings firstly contribute information on breastfeeding-supportive practices in designated workplaces. Secondly, they provide insight into the experiences of employees, breastfeeding mothers and employers relating to breastfeeding support at the workplace. Finally, the study yielded a practice model to guide workplace support for breastfeeding in designated workplaces. The practice model was developed making use of programme theory approaches and logic models, validated and presented for feedback to the nine participating workplaces.

Supervisor: Prof XG Mbhenyane
Co-supervisor: Prof L-M du Plessis

DICKIE, Kasha Elizabeth (Sport Science)

Behavioural lifestyle factors and cardiometabolic disease risk in woman from a low socio-economic urban community in Stellenbosch (Western Cape)

The effectiveness of health promotion programmes in a specific environment is dependent on our knowledge of the recipients of such programmes. Therefore, the aim of this study was to profile the physical activity patterns and cardiometabolic disease risk in apparently healthy adult women from an under-resourced community in Stellenbosch. Two-thirds of the women did not meet the international recommendations for daily physical activity and 80% presented with more than three cardiometabolic health risk factors, of which central obesity and sedentary behaviour were the most prevalent. Women in this community require context-specific, practically feasible and sustainable health promotion programmes to address their high levels of non-communicable disease risk.

Supervisor: Prof E Terblanche

DU TOIT, Elizabeth (Psychiatry)

Maternal mental health: A prospective longitudinal cohort study of the outcome of planned versus unplanned pregnancy in women with major psychiatric disorders in a developing country

This study examined the role of pregnancy planning in South African women with major psychiatric disorders, with a view to explore the complexities of and risk factors for unplanned pregnancy and to identify potential risk factors for adverse birth outcomes and perinatal suicidality. Knowledge gained emphasised the critical importance of using nuanced screening tools for identifying pregnant women at risk of psychiatric illness on the one hand, and psychiatric patients at risk of unplanned pregnancy on the other. Outcomes strongly support integrated, holistic healthcare solutions, with education playing a key role.

Supervisor: Prof L Koen
Co-supervisor: Prof DJH Niehaus

DU TOIT, Jacques (Orthopaedics)

Ageing with cerebral palsy after being treated with orthopaedic interval surgery approach during childhood

The aim of this study was to determine the physical status and changes in gait, spinal curvatures and the levels of accomplishment and satisfaction in ambulant adults with cerebral palsy and spastic diplegia who had been treated with an orthopaedic interval surgery approach in childhood. Although significant changes were found between adults with cerebral palsy and typically developed adults, minimal to no deterioration was seen during the six-year follow-up period. The findings of this study provide valuable insights into ageing with cerebral palsy and how healthy ageing can be stimulated and improved in this population group.

Supervisor: Prof RP Lamberts
Co-supervisor: Dr NG Langerak (external)

DUDLEY, Lilian Diana (Public Health)

Continuity of care for tuberculosis patients between hospital and primary healthcare services in South Africa

This study employed a mixed-methods approach to explore continuity of care for tuberculosis (TB) patients discharged from acute care hospitals in South Africa. The findings led to the implementation of a multi-component, evidence-informed discharge management intervention that significantly improved continuity of care for TB patients. Factors that affect implementation and sustainability of the intervention were also explored, and a policy brief identified health systems and health workforce actions to improve continuity of care for TB patients. The study makes a number of important contributions to our understanding of continuity of care for TB patients discharged from acute care hospitals.

Supervisor: Prof J Volmink
Co-supervisor: Prof. M Zwarenstein (external)

ENGELBRECHT, Madri Hendrina (Occupational Therapy)

Occupational justice through paid work: A qualitative study of work transition programmes for youths with disabilities

Youths with disabilities remain excluded from employment, to the detriment of their health and well-being. This study explored how a programme for youths with intellectual disabilities facilitated their transition into work, thereby promoting participation and equity in health-promoting occupation. The qualitative data collected yielded rich information for analysis through a critical occupational lens. The findings reflected how the programme harnessed the support of key role players in enabling work transitions of youths. The programme further followed a human rights approach that underlined a supported employment strategy to establish occupational justice through work for this group.

Supervisor: Prof L van Niekerk
Co-supervisor: Prof L Shaw (external)

EVERSON, Frans Pieter (Medical Physiology)

HIV/AIDS and air pollution as emerging cardiovascular risk factors in Cape Town populations: Is endothelial function a marker of effect?

South Africa has a high prevalence of cardiovascular risk factors. The role of HIV, antiretroviral therapy (ART) and air pollution as emerging risk factors is poorly described in South African populations due to a lack of longitudinal studies. This study investigated whether HIV, ART and air pollution are associated with cardiovascular risk and vascular endothelial dysfunction in Western Cape participants. Endothelial function is an under-utilised cardiovascular biomarker in the South African research context. The findings showed, for the first time, that HIV, ART and air pollution were associated with temporal clinical and biochemical endothelial changes in an adult South African population.

Supervisor: Prof H Strijdom
Co-supervisors: Profs P De Boever, N Goswami, T Nawrot (external)

GCAWU, Luleka Patricia (Nursing Science)

The development of validated guidelines that contribute to the prevention of malpractice litigation in nursing practice in South Africa

Substandard care resulting in large pay-outs due to malpractice litigation remains a challenge in nursing practice. The rapid increase in medical/nursing malpractice litigation from R40 billion in 2015–16 to R90 billion in 2019 and R104 billion in 2020 emphasised the need to explore the factors contributing to malpractice litigation in nursing practice. The investigation resulted in validated guidelines that help in the prevention of malpractice litigation in nursing practice in South Africa. These guidelines were developed through a Delphi technique based on the outcome of the 325 audited study trial bundles from both the private and the public healthcare sector.

Supervisor: Prof EL Stellenberg
Co-supervisor: Prof S Whittaker (external)

HERADIEN, Marshall Jacobus (Internal Medicine)

Renal denervation restores autonomic imbalance and prevents atrial fibrillation in patients with hypertensive heart disease: A pilot study

This was a small-scale (80 subjects), but well-powered randomised control trial in persons with resistant hypertension and hypertensive heart disease. Achieving access via a peripheral artery to the circulation, a catheter-based destruction of the kidney's nerves was performed in research subjects. These interventions led to reduced atrial fibrillation (AF) in the experimental arm. AF is a major cause of strokes. Concomitant changes in autonomic balance were not substantiated. The study adds to the armamentaria available to maintain sinus rhythm in persons with a high risk of AF.

Supervisor: Prof PA Brink

KALUNGI, Allen (Psychiatry)

Internalizing mental disorders in HIV: The role of environment, telomere length and selected genetic variants

HIV-positive children and adolescents suffer from a considerable burden of internalising mental disorders (IMDs), which are associated with numerous negative outcomes, including increased HIV disease progression. This study investigated whether acute stress interacts with vulnerability factors (genetic and/or acquired) to influence the development of IMDs in a sample of Ugandan children and adolescents with HIV. The results indicated an association between IMDs and accelerated biological aging, and provided evidence for the role of serotonin gene-environment interactions in the risk of developing IMDs among HIV-positive children and adolescents in Uganda. Understanding the molecular aetiology of IMDs is important for future efforts towards discovery of new drugs or putative drug targets for IMDs as well as biomarkers for diagnosis, and this study makes important steps in this direction.

Supervisor: Prof SMJ Hemmings

Co-supervisors: Prof S Seedat, Dr J Womersley, Profs E Kinyanda (external), M Joloba (external)

LAUGHTON, Barbara (Paediatrics)

The neurodevelopmental outcome of perinatally HIV-infected children on different antiretroviral treatment strategies

The effects of continuous and interrupted early antiretroviral therapy (ART) on the neurodevelopment of HIV-positive children is unknown. This research entailed a prospective neurodevelopmental study in children from the Children with HIV Early Antiretroviral (CHER) trial. In the first year, early ART from a median of seven months was significantly better than deferred ART according to concurrent guidelines. While ART interruption had some negative effects, by six years of age, all children performed as well as age-matched controls, apart from mildly impaired visual perception. The study also documented emerging and resolving HIV encephalopathy on unchanged ART, suggesting resolution of intracerebral inflammation.

Supervisor: Prof MF Cotton

Co-supervisor: Prof M Kruger

MATHEWSON, Elizabeth (Sport Science)

Coordination of place kicking in rugby unions

Place kicking is a crucial skill in rugby, as more than 40% of the points scored in professional rugby matches are the result of place kicks. Rugby kicking has mainly been analysed through isolated segment positions or movements. This study quantified characteristics of place-kicking technique from a coordination variability perspective. A cluster analysis revealed a knee-dominant, hip-dominant and a combination technique. For kicking at any distance, kickers could alter absolute joint angles, but coordination patterns should stay consistent. Coaches should train kickers to keep their rhythm consistent when kicking at different distances from the posts.

Supervisor: Prof RE Venter

Co-supervisors: Drs J Cockcroft, E Preatoni (external)

MUTAVHATSINDI, Hygon (Molecular Biology)

Evaluation of host biosignatures for targeted screening for tuberculosis at the point of care and monitoring of the response to tuberculosis treatment

Tuberculosis (TB) is an ancient disease, but still kills millions of people every year. This study investigated different proteins in blood and saliva that may lead to new and simpler ways of diagnosing the disease. The study proposes novel methods that include testing for not more than three proteins in the blood, which will lead to a faster diagnosis of the disease, hence early initiation of treatment. Three peer-reviewed articles and a provisional patent are expected from this study. Some of the proteins discovered in the research have been included in a new TB test that is currently undergoing clinical trials in three different African countries.

Supervisor: Prof N Chegou

Co-supervisor: Prof G Walzl

NDLOVU, Zibele (Medical Physiology)

Epac's (exchange protein directly activated by cAMP) role in obesity-induced cardiovascular diseases

Cardiovascular disease (CVD) and associated obesity place a major burden on healthcare globally. It is therefore important to identify pathophysiological mechanisms underlying potential therapeutic interventions. This study investigated exchange protein directly activated by cAMP (Epac) as a target for understanding these mechanisms. Post-ischaemic Epac activation was cardioprotective against ischaemia/reperfusion injury in isolated hearts from diet-induced obese rats, partially via the RISK survival pathway. Epac activation also improved rat aortic vasorelaxation via nitric oxide (NO) synthase. In addition, Epac activation increased NO production and reduced reactive oxygen species generation in rat aortic endothelial cells. Epac may hence be a potential therapeutic target in the protection against CVD.

Supervisor: Dr E Marais

Co-supervisor: Prof H Strijdom

OKUNOLA, Abisola Oyedele (Chemical Pathology)

Investigation of the role of vitamin D metabolism in South African breast cancer patients using a pathology-supported genetic testing platform

Vitamin D deficiency, as a modifiable risk factor for osteoporosis, occurs in more than half of postmenopausal breast cancer patients treated with bone-depleting aromatase inhibitors. New knowledge generated through the pathology-supported genetic testing platform, using whole-exome and long-range nanopore sequencing with the pocket-size MinION device, allows screening of postmenopausal patients with hormone receptor-positive breast cancer for osteoporosis risk as co-morbidity, and an increased risk of bone loss when aromatase inhibitor therapy is considered. Differences in body mass index and the genetic profiles detected at upper and lower margins of vitamin D range inform a targeted approach to patient management.

Supervisor: Prof MJ Kotze

Co-supervisors: Profs RT Erasmus, AE Zemlin, Dr R Torrorey-Sawe (external)

OMOLAOYE, Temidayo Siyanbola (Medical Physiology)

The possible ameliorating effects of rooibos, honeybush and Sutherlandia on diabetes-induced reproductive impairment in adult male Wistar rats

The global diabetes pandemic poses an enormous health challenge, as it affects many organ systems. Diabetes-related infertility is implicated in contributing significantly to the observed temporal decline in male fertility. This study explored the effects of insulin resistance on male reproductive parameters at cellular and intracellular levels. Both structural and functional abnormalities were observed. This could be ascribed to unique findings of aberrations in intracellular signalling pathways, oxidative stress and hormone levels. Furthermore, treatment with three different indigenous herbal extracts mildly ameliorated hyperglycaemia and sperm function. This study provided novel insight into the pathophysiology of diabetes and male infertility.

Supervisor: Prof SS du Plessis

RABIE, Helena (Paediatrics)

Pharmacokinetics and therapeutic outcomes in children with tuberculosis/HIV co-infection treated with lopinavir-ritonavir and a rifampicin-containing anti-tuberculosis regimen

Tuberculosis occurs commonly in HIV positive children. Rifampicin, an important component of anti-tuberculosis therapy reduces exposure to key antiretrovirals and leads to resistance. This study confirmed that super-boosting oral lopinavir-ritonavir-4:1 solution with additional ritonavir to a 4:4 ratio overcame the rifampicin effect and was both safe and effective. Rifampicin also reduced abacavir exposure by 30 percent in super-boosted children. Increasing lopinavir-ritonavir-4:1 from twice to thrice daily was, however, ineffective. Super-boosting, while effective, is logistically difficult and poorly tolerated in some children. New strategies are needed.

Supervisor: Prof MF Cotton
Co-supervisors: Profs R Gie, S Schaaf

SNEGIREVA, Nadja (Sport Science)

Eye tracking as a diagnostic and monitoring tool for sports-related concussion

Eye movements have become an easy-to-quantify physiological indicator for a range of disorders, as they reflect brain dysfunction. Consequently, the aim of this study was to establish whether eye-tracking technology would be a clinically useful, reliable and valid method to diagnose and monitor youth as well as adult athletes who have sustained a sports-related concussion. An important contribution of this study is the finding that the reliability of eye-tracking measures in athletic cohorts might be lower compared to the general population. Selected eye-tracking measures were identified that may contribute to the management of sports-related concussion.

Supervisor: Dr K Welman
Co-supervisor: Prof EW Derman, Dr J Patricios (external)

SPRINGER, Priscilla Estelle (Paediatrics)

Neurodevelopmental and behavioural outcome of the HIV-exposed uninfected infant and child

The effect of maternal HIV infection on the neurodevelopment of HIV-exposed uninfected (HEU) infants is unknown. This research entailed a prospective longitudinal study on the neurodevelopment of HEU and HIV-unexposed (HU) mother-infant dyads, matched for home language, culture and maternal social characteristics. The study found similar performance for motor, language and cognitive domains, but more behavioural problems in the HU group. Childhood stunting was significantly associated with poorer motor and behavioural outcome, irrespective of HIV exposure. The study identified the Goodenough drawing test screening tool (DAP) as promising for detecting fine motor and visuo-perceptual delay in five-year-old children.

Supervisor: Prof M Kruger
Co-supervisor: Prof CD Molteno (external)

VAN DEN HEUVEL, Leigh Luella (Psychiatry)

Hair cortisol as a neuroendocrine biomarker to evaluate the impact of chronic stress on the interaction between neuropsychiatric disorders and metabolic syndrome

The study utilised hair cortisol concentrations (HCCs) as a measure of longer-term hypothalamic pituitary adrenal (HPA) axis function to investigate the links between HPA axis dysfunction, neuropsychiatric disorders (NPDs) and cardiovascular disease (CVD) risk, as defined by metabolic syndrome (MetS). HCCs were altered in NPDs and significantly associated with certain CVD risk factors, although not with MetS. The findings provide evidence for HPA axis dysregulation in NPDs and comorbid CVD risk. Considering the high burden of CVD in NPDs, this study sheds light on long-term HPA axis dysfunction in the co-occurrence of CVD and NPDs.

Supervisor: Prof S Seedat

VAN WJIK, Rochelle (Anatomy)

An investigation of the effects of a high-sucrose diet on the cognitive function and histomorphology of the rat brain

This study investigated the effects of a high-sucrose diet on the cognitive function and brain histomorphology in Wistar rats by means of foetal programming. High sugar intake of dams pre- and perinatally led to memory deficits and histological changes in the hippocampus of offspring. Removal of sugar from the diet partially mitigated neurological alterations; however, still below reference parameters. This evidence suggests that early life exposure to high-sucrose diets impairs the memory of offspring, potentially increasing the didactic needs of young children in the future. These findings are important for diabetes and metabolic syndrome management during pregnancy and early childhood.

Supervisor: Prof SH Kotze

VENTER, Rouxjeane (Molecular Biology)

Novel approaches for the diagnosis of drug resistance, treatment response and infectiousness in patients with tuberculosis

Drug-resistant tuberculosis is at a pandemic level in South Africa. Breaking the transmission cycle is key, which can be done by reducing the time to diagnosis and through effective treatment, and knowing when patients are non-infectious to safely discharge. The study showed that material otherwise discarded after the initial tuberculosis diagnosis can be used for drug susceptibility testing, thereby obviating the need for additional specimen collection and enabling full single-specimen diagnosis. The study highlights a major new area for future research by showing that state-of-the-art tools perform poorly for treatment response monitoring, and developed innovative approaches for directly capturing infectious aerosol from patients' cough.

Supervisor: Prof G Theron
Co-supervisor: Prof RM Warren

VLOK, Adriaan Johannes (Neurochirurgie)

Comparison of intrathecal and intravenous morphine for postoperative analgesia after single-level spinal fusion surgery

Hierdie studie het 'n ondersoek behels na die gebruik van 'n klein enkelgekalibreerde dosis morfien toegedien in die serebrospinale vog gedurende enkelvlak-rugchirurgie. Die dubbelblinde studie bevestig dat die prosedure in minder pyn, vroeër mobilisasie en ontslag van pasiënte uit die hospitaal resulteer. Laasgenoemde is geassosieer met 'n betekenisvolle kostebesparing en meer aktiewe bedbenutting. Die studie bevestig ook dat morfien voorspelbaar aanleiding gee tot alveolêre hipoventilasie vir die eerste tien uur ná die prosedure, maar dat die hipoventilasie nie aanleiding gee tot hipoksie indien pasiënte suurstofterapie ontvang ná die prosedure nie.

Promotor: Prof AR Coetzee
Medepromotor: Prof J du Toit

WALKER, Claire Nancy (Sport Science)

Performance profiles and training loads of optimist sailors

Despite a growth in competitive sailing, there remains limited research available supporting performance analysis and athlete monitoring in sailing. Therefore, the aim of this study was to determine race performance indicators of high-level Optimist sailors and to quantify the training loads within different wind intensities of competitive South African Optimist sailors. This is the first study to address these questions in Optimist sailors as well as to develop an Optimist race performance profile from the IODA Optimist World Championships. The methods identified may prove useful when analysing Optimist sailors' performance during competition and training and to prevent sports-related injuries.

Supervisor: Dr KE Welman

WHITE, Charlize (Medical Physiology)

Phosphorylation during ischaemia and reperfusion of the heart: A focus on protein phosphatase 2A

Phosphatase-mediated dephosphorylation influences protein phosphorylation dynamics, which determine the cellular response to external stressors. The aim of this study was to explore the interactions of a major phosphatase, protein phosphatase 2A (PP2A), in isolated mouse hearts subjected to ischaemia/reperfusion. Inhibition of PP2A reduced infarct size, while phosphoproteomic analysis revealed an extensive network of proteins associated with PP2A. One of these, the phosphatase/kinase scaffold protein striatin, was identified in mitochondria, while PP2A was found to be localised to the outer mitochondrial membrane. The study exposed several new possible spheres of influence for PP2A in the heart, including mitochondrial dynamics.

Supervisor: Dr D van Vuuren

Co-supervisors: Prof A Lochner, Dr E Marais

ZARRABI, Amir David (Urology)

The management of infertility secondary to azoospermia in a developing country: Is microsurgery a feasible solution?

This study outlines the clear need that exists for addressing the limitations of microsurgery in male infertility treatment in South Africa. The study showed that the results in the reversal of vasectomy can be similar to internationally achieved results and was successful in obtaining excellent outcomes in severe non-obstructive azoospermic men with the micro-TESE technique. Based on the model used in North America, it was found that the components essential to the development of a training programme in male infertility and microsurgery are available.

Supervisor: Prof TF Krüger

Fakulteit Geneeskunde en Gesondheidswetenskappe Faculty of Medicine and Health Sciences

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Natuurwetenskappe Master of Science

Alzaben, Ghadeer Salman R (Baromedical Sciences)
Amankwaa, Ampona (Clinical Epidemiology)
Bain, Chane (Human Genetics)
Brand, Chante (Medical Microbiology) (*cum laude*)
Chinhenzva, Albert (Biostatistics)
Du Plessis, Su-Mari (Molecular Biology) (*cum laude*)
Ferreira, Janca (Medical Virology)
Gwayagwaya, Chipo Sitembile (Infection Prevention and Control)
Haushona, Ndamonaonghenda (Biostatistics)
Immelman, Wilma (Medical Microbiology)
Lailulo, Yishak Abraham (Clinical Epidemiology)
Mahlangu, Dawn Nomusa (Medical Physiology)
Mahungu, Amokelani Clementine (Human Genetics) (*cum laude*)
Mamushi, Mokadi Peggy (Medical Physiology)
Manas, Lorisha Carine (Clinical Epidemiology)
Mapahla, Lovemore (Biostatistics)
Maumela, Lutendo (Medical Physiology)
Meiring, Elizabeth (Reproductive Biology)
Mhike, Tinashe (Biostatistics)
Nwaiwu, Akuoma Ugochi (Clinical Epidemiology)
Pieterse, Sonja (Clinical Epidemiology)
Ramsay, Dylan (Reproductive Biology)
Reddy, Kessendri (Clinical Epidemiology) (*cum laude*)
Sigwadhi, Lovemore Nyasha (Biostatistics)
Van der Merwe, Hester Maria (Medical Physiology)
Venter, Michaela Lucienne (Medical Virology)
Young, Caitlyne (Molecular Biology) (*cum laude*)

Magister in die Natuurwetenskappe in Sportwetenskap Master of Science in Sport Science

De Wet, Jana Senobia
Donkin, Cameron James
Fisher, Carynne Alison
Opperman, Eben
Opperman, Simon
Potgieter, Ane (*cum laude*)
Solomons, Jocelyn
Van Vuuren, Johannes Odendaal

Magister in die Geneeskunde Master of Medicine

Boy, Darryl Peter (Internal Medicine)
Coetzee, Werner Carel (Surgery)
Etwati, Osama Ali Mohamed (Internal Medicine)
Hutton, Lauren Nicole (Family Medicine) (*cum laude*)
Nuckchedee Dookhony, Luvina Devi (Paediatrics)
Sekgabo, Nightingale Banyana (Paediatrics)
Van Niekerk, Margaretha Susan (Paediatrics)

Magister in Voeding in Openbare Gesondheid Master of Public Health Nutrition

Gamedze, Thobile Lefty (Public Health Nutrition)
Kaltenbrun, Tayla Ashton (Public Health Nutrition) (*cum laude*)
Pilditch, Kerry Jean Maude (Public Health Nutrition) (*cum laude*)

Magister in die Natuurwetenskappe in Geneeskundige Wetenskappe Master of Science in Medical Sciences

Gysman, Nozipiwo Joyce (Rehabilitation)

Magister in Menslike Rehabilitasiestudies Master of Human Rehabilitation Studies

Chishimba, Rodgers (Rehabilitation)
Gudwana, Khangelani (Rehabilitation)
Mphohoni, Mashudu Ronald (Rehabilitation)
Winton, Loreen Camn (Rehabilitation)

Magister in Patologie Master in Pathology

Marshall, Michelle Anthea (Anatomical Pathology)

Magister in die Wysbegeerte in Gesondheidswetenskap-onderwys Master of Philosophy in Health Sciences Education

Barnard, Deborah
Herman, Vironica Viginia

Magister in die Wysbegeerte Master of Philosophy

Andries, Carmen Marie (Infant Mental Health)
Ayodele, Olugbenga Edward (Health Professions Education)
Diale, Motlatsi Mary (Health Systems and Services Research)
Fobian, Noeline (Health Professions Education)
Marks, Carine Johanna (Health Professions Education)
Ngoy-Kalenga, Doudou-Olivier (Health Systems and Services Research)
Ngwalo, Cynthia Amanda (Health Systems and Services Research)
Smith, Kim Grace (Health Systems and Services Research)

Magister in Arbeidsterapie Master of Occupational Therapy

De Villiers, Milandi
De Wit, Monique
Gandawa, Walter
Huchu, Rugare
Opoku, Eric Nkansah (*cum laude*)
Tsatsi, Itumeleng Augustine
Uys, Michelle Elizabeth (*cum laude*)

Magister in die Verpleegkunde Master of Nursing

Baron, Justine Carla
Bruiners, Salvador
Daniels, Ruth Carol
Hammond, Candice Maree
Haukongo, Naemi Namutenya
Hayton, Margaretha Elizabeth
Herman, Veronica Cynthia
Hlana, Sylvia Nompucuko
Kotze, Elcalien
Motaba, Malintle

Ruiters, Matthew Francis
Russell, Hanilene Juliana
Scheepers, Vanessa Christina
Shitemo, Kaverua Christina
Sunnasy, Alethea
Tatapa Zim Mabandla, Mamoferefere

Magister in Voeding
Master of Nutrition

Clarke, Pamela Michelle (Nutritional Sciences)
Saayman, Bernadette Danielle (Nutritional Sciences)
Shabangu, Simon Vally (Nutritional Sciences)

Magister in Terapeutiese Voeding
Master of Therapeutic Nutrition

Erasmus, Nina Ariel (Therapeutic Nutrition)
Lenhoff, Annemie (Therapeutic Nutrition)
Robertson, Nina Ursula (Therapeutic Nutrition)

Magister in Fisioterapie
Master of Physiotherapy

Charumbira, Maria Yvonne (*cum laude*)
Du Toit, Abraham Coetzee
Hall, Siobhan Mackenzie (*cum laude*)
Martin, Melissa Jo-Ann
Schoonraad, Nabila
Stowell, Michelle

Magister in Oudiologie
Master of Audiology

Lombaard, Suryan

Magister in Spraak-Taalterapie
Master in Speech-Language Therapy

Brand, Bea-Mari
Buys, Kristen Hannah Somerville (*cum laude*)
Hurter, Martinette
Uys, Jani Petronell

Magister in die Wysbegeerte in Reproductiewe Geneeskunde
Master of Philosophy in Reproductive Medicine

Shareef, Osama

Honneurs-Baccalaureus in die Natuurwetenskappe
Bachelor of Science Honours

Aaron, Joshua Alexander (Medical Virology)
Cheung, Tsz Ki (Underwater Medicine) (*cum laude*)
Fontanez Aldea, Richard (Underwater Medicine)
Mc Caffrey, Caitlin (Molecular Biology) (*cum laude*)
Mostert, Suné (Molecular Biology) (*cum laude*)
Schuin, Janine (Human Genetics) (*cum laude*)

Honneurs-Baccalaureus in Verpleegkunde
Bachelor of Nursing Honours

Engelbrecht, Romi Stefanie
Joseph, Desiree Celeste
Nembahe, Phophi
Truter, Danline Joline

Nagraadse Diploma in Verpleegkunde
Postgraduate Diploma in Nursing

Dentlinger, Amanda Evangeline (Primary Health Care)
Ditta, Tehzeeb Rana (Primary Health Care)
Fongoqa, Lumka Prudence (Primary Health Care)
Gxakaza, Bongeka Phyllis (Primary Health Care)
Gxumeka, Nontsasa (Primary Health Care)
Hlalukana, Bongiswa Sylvia (Primary Health Care)
Jikwana, Zukiswa (Primary Health Care)
Makeleni, Bubele (Primary Health Care)
Mateta, Patricia (Primary Health Care)
Mbaza, Zukiswa Constance (Primary Health Care)
Mdlangazi, Xolelwa Tiny (Primary Health Care)
Pekeur, Sharlene Tanya (Primary Health Care)
Savage, Margaret (Nursing Management)
Van Wyk, Timoneen Gailen (Primary Health Care)
Wingrove, Bernadette (Primary Health Care)
Wolsak, Nomfanelo (Primary Health Care)
Zass, Cindy (Primary Health Care)
Zenani, Nonceba Mercy (Primary Health Care)

Nagraadse Diploma in Huisartskunde
Postgraduate Diploma in Family Medicine

Kaninda, Miandabu Carine
Memeh, Uloma Gloria
Moulick, Prottyush Kumar
Sahli, Mohamed Nael

Nagraadse Diploma in Beroepsgeneeskunde
Postgraduate Diploma in Occupational Medicine

Davids, Ladonna Rae

Nagraadse Diploma in Volwasse-kritiekeorg- Verpleegkunde
Postgraduate Diploma in Adult Critical Care Nursing

Beukes, Janine Mercia
Nahimana, Innocent

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

Ben, Ivonne Vuyokazi Preceouse
Coetzee, Angela
Jara, Ntombizandile Ruth
Jim, Sarah Nondumiso
Jordaan, Johanna Margaretha
Kalatile, Refiloe
Ndlambe, Asiphe Mavis
Qwabe, Ntombiyakhe
Sekotlo, Polo
Sharpe-Abels, Leandrie
Thaele, Ulrike Johanna Elisabeth
Van Rooi, Leonie Audrey
Volkwyn, Rosheen

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

James, Heidi
Jannetjies, Lu-Wyne
Khonkotha, Zanele Felicia
Titus, Zenobia

Nagraadse Diploma in Gevorderde Psigiatriese Verpleegkunde
Postgraduate Diploma in Advanced Psychiatric Nursing

Dyasi, Ligwa Raymond
Mentoor, Mohammad Kashif
Ngwenya, David Walter
Ntshinka, Bukiwe Bulelwa

Nagraadse Diploma in Verpleegonderwys
Postgraduate Diploma in Nursing Education

Adams, Cady Tazmin
Aporele-Letuka, Tsireletso Cecilia
Befile, Nomawethu
Claassen, Rivonia Estine
Coetzee, Charmaine Patricia
Dulandas, Reka
Hadebe, Mendi Rachel
Le Roux, Simone
Lethoko, Matsapa Ezekiel
Mali, Patience
Meyer, Lorinda
Mika Tsekoa, Sebongile Mampho (*cum laude*)
Mshumi, Sicelo Lennox
Nyezi, Chumani
Rayners, Linda Elizabeth
Rose, Margie
Tesele, Matokelo Matsoene Evelyn Lesesa
Tokwe, Lwandile (*cum laude*)
Tsehlanyane, Ntaoleng Patricia Matebello Phamotse
Tsilo, Mapule

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

Abrahams, Claudine Wilhelmine
Bailey-Smith, June-Lydia
Booi, Cornelia Kanyisa
Daniels, Josephine Margaret
Daniels, Levona Zeviera
Endjere, Olichen Melicia
Goqwana, Hombakazi Iris
Hlungwane, Emmanuel Zamokwakhe
Ngesimani, Nomalungelo
Nompunga, Bukiwe Zimi
Patala, Yandiswa
Rala, Siphokazi (*cum laude*)
Samuel, Thembakazi
Singh, Neresha
Slaughter, Maria Magdalena
Snyman, Maroline Cecilia
Tomas, Theolinda Nuugwanga

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

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

Abels, Mandy Lynne
Kroneberg, Kayla Simone
Lakay, Claudia Rachele
Lelope, Mamosala Tumelo
Moerat, Waafir
Mohamed, Ray Pamela
Msimanga, Bandile Mondli
Sambumbu, Phumelela
Schafer, Nicole Mary
Van Zyl, Mari



Fakulteit
Ingenieurswese

Faculty
Engineering

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte Doctor of Philosophy

AGENBAG, Wiehan (Electronic Engineering)

Automatic sub-word unit discovery and pronunciation lexicon induction for automatic speech recognition with application to under-resourced languages

Automatic speech recognition systems require the pronunciation of each word in the language of interest to be defined in terms of sub-word units, typically phonemes. However, this requires human linguistic expertise, which is very often not available for under-studied and under-developed languages, including those most spoken in southern Africa. This study developed a method that automatically discovers such sub-word units and expresses each word in terms of these units. It is shown that automatically generated pronunciations obtained in this way perform as well as or better than expert-crafted pronunciations for two Ugandan languages.

Supervisor: Prof TR Niesler

BABALOLA, Oluwaseyi Paul (Electronic Engineering)

Soft-decision decoding of moderate-length binary cyclic codes based on parity-check transformation

This study focused on obtaining low-complexity soft-decision decoding of binary cyclic codes with coding performance close to the optimal decoding algorithm. The belief propagation algorithm is commonly used to obtain near-optimal decoding, but is inappropriate for high-density parity-check codes. Therefore, the extended parity-check transformation algorithm and the generalised parity-check transformation algorithm were developed based on the parity-check matrix transformation to overcome the limitation of belief propagation for high-density parity-check codes. Furthermore, a perfect knowledge model was developed to verify optimality of all belief propagation-based algorithms for high-density parity-check codes.

Supervisor: Prof DJJ Versfeld

BEDZO, Oscar Koku Kplorm (Chemical Engineering)

Process improvements and techno-economic analyses for the production of short-chain fructose-containing oligosaccharides from sucrose and Jerusalem artichoke tubers

Recently, the global market for short-chain fructooligosaccharides (scFOS) and inulooligosaccharides (IOS) has increased due to the rising health awareness and demand for calorie-controlled foods. This study conducted process improvements and techno-economic evaluations on the production of scFOS and IOS, as they are alternatives to each other and compete in the market space. The results indicated that scFOS production from sucrose offers superior economic benefits compared to the production of IOS from Jerusalem artichoke tubers. Ultimately, South Africa has the potential to contribute its quota to the prebiotic market by channelling part of the excess sugar into scFOS production to maximise revenue.

Supervisor: Prof JF Görgens

BENNETTO, Robert Andrew (Industrial Engineering)

Evolutionary search strategies in constraint programming

This study centred on the use of evolutionary processes for deriving problem-specific branching strategies that can be employed in constraint programming solvers to resolve constraint satisfaction problems. Both single-objective and multi-objective approaches to the optimisation of the search strategy were demonstrated to be effective, although the multi-objective optimisation approach proved superior. Different graph characteristics were explored in the grammar employed to determine a suitable search strategy. A deep learning model was also shown to be a capable predictor of branching strategy performance on seen and unseen problem instances, subject to an additional descent procedure to refine the model.

Supervisor: Prof JH van Vuuren

BUENK, Reinhart (Industrial Engineering)

Development of a monitoring and evaluation framework for sustainability assessment of microtransit systems

Microtransit can be described as either freight or shared public/private sector transport along fixed or constantly changing routes operating as a technology-enabled shuttle in a demand-responsive manner through utilising information and communication technologies and the internet of things. A generic monitoring and evaluation (M&E) framework was developed, exploring the links between microtransit systems/intelligent transport systems (ITS) and sustainable economic, social and environmental development. The purpose thereof was to provide stakeholders with a decision support tool to build realistic, profitable and sustainable microtransit/ITS companies. Utilising the framework as a management tool through continuous M&E will help validate decisions and ensure sustainability.

Supervisor: Prof SS Grobbelaar

BVUCHETE, Munyaradzi (Industrial Engineering)

A demand-driven supply chain management maturity model for the public healthcare sector

In order to cope with low forecast accuracy and high demand variability in complex public healthcare supply chains, many supply chain nodes are trying to move from a pure push strategy to a pull strategy, driven by actual customer demand. However, there are few methodologies through which an analyst can impartially measure and support the implementation of demand-driven supply chain management (DDSCM) practices in public healthcare supply chain networks (SCNs). In this study a network-maturity mapping tool was developed that supports the design, implementation, assessment and maturation of DDSCM for unique supply chain nodes in public healthcare SCNs.

Supervisor: Prof SS Grobbelaar

Co-supervisor: Dr J van Eeden

DOGBE, Eunice Sefakor Aku (Chemical Engineering)

Exergy, techno-economic and exergoeconomic analyses for improving energy efficiency of a typical sugar mill and designing integrated biorefineries

Traditional sugar mills worldwide face energy, economic and environmental challenges due to inefficient plant designs and fluctuations in the world sugar market, despite the vast opportunities to diversify the industry. Using a thermodynamic tool, namely exergy analysis, this study diagnosed the inefficiencies of a typical South African sugar mill, simulated in Aspen Plus[®]. Based on the findings, the Organic Rankine Cycle, absorption heat pump and biorefinery products were integrated, which improved the energy efficiency and economics of the plant. The study also introduced a novel application of exergoeconomic analysis to select the most energy-efficient and cost-effective biorefinery for integration.

Supervisor: Prof JF Görgens

DU TOIT, Hendrik Jakobus (Electronic Engineering)

Partially filled radial power combiner with port isolation

Practical implementations of fully isolated N-way power combiners have been an open and illusive problem in microwave engineering for many years. Building on a previous PhD project, which described a general theoretical model for such structures, this study demonstrates the first ever completely matched and isolated prototype of a microwave power combiner with more than eight input ports. The implication of the isolation is that all input signals couple only to the output port, and not to any other input ports. Applications of these devices include space- and airborne radar as well as array antennas for next-generation communication systems.

Supervisor: Prof DIL de Villiers

ELLIS, David Rostin (Mechanical Engineering)

Generative design procedure for embedding complex behaviour in pneumatic soft robots

By utilising evolutionary principles to develop a numerical tool for designing soft pneumatic actuators, it is possible to accelerate the design cycle for a variety of applications. Nonlinear finite element models made structural predictions, which showed a close correlation to manufactured prototype actuators. Further, by including a bilinear material as a strain-limiting layer, a bimodal behaviour could be included while using a linear pressure input. It therefore becomes possible to manipulate the bending direction of the actuator by varying only the internal pressure. This study is a meaningful step forward in the automated design of soft intelligent structures.

Supervisor: Dr MP Venter

Co-supervisor: Prof G Venter

FRANKEN, Hendrik Hermanus (Chemical Engineering)

The hydrodynamics of supercritical packed countercurrent columns

This study explored hydrodynamics at supercritical conditions. A setup concurrently measuring phase equilibria, density and viscosity at high pressures was designed, constructed and verified, whereafter such data were measured for two systems used in the hydrodynamic study. Newly measured pilot plant scale hydrodynamic data were used to determine the operable limits of a typical supercritical fractionation column and investigate the influence of the fluid properties on the hydrodynamic behaviour of the column. The gathered data were also used to evaluate available models and assess parallels to classical hydrodynamics theories.

Supervisor: Prof CE Schwarz

Co-supervisor: Prof JH Knoetze

HAMANN, Martin Louis (Chemical Engineering)

Uncatalysed steam pretreatment regimes for bagasse and harvest residues in a sugarcane biorefinery

Preferred operating regimes were developed to produce sugar intermediates for a sugarcane biorefinery via uncatalysed steam pretreatment of sugarcane lignocellulosic wastes, namely bagasse and harvest residues. Pretreatment was optimised in the ranges of 185 to 215 °C and 5 to 15 minutes for maximum digestibility of the pretreated solids, maximum combined sugar yield and maximum hemicellulose recovery. In contrast to bagasse, these responses could be maximised in a common pretreatment regime for harvest residues to simplify pretreatment operation. Pretreated harvest residues also displayed better dewaterability and fermentability characteristics. Therefore, harvest residue collection should be increased and allocated to bioprocessing in a sugarcane biorefinery.

Supervisor: Prof JF Görgens

Co-supervisor: Dr E van Rensburg

KIRINGU, Josephat Kuria (Civil Engineering)

Investigation into fine non-cohesive sediment removal by swirl/vortex settling basins at small river abstraction works

Coarse sediment removal at river abstraction works is essential for the protection of pumps and pipelines. A vortex settling basin (VSB) is proposed as a low-cost option for use by rural local authorities for potable water supply and small irrigation schemes in Africa. The hydraulic design of a VSB was optimised through numerical and physical modelling. The proposed VSB has two unique characteristics: the orientation of deflectors and the positioning of the outlet at the centre of the VSB at the surface. The proposed design achieves high sediment trapping efficiencies for sediment particle diameters as small as 75 microns.

Supervisor: Prof GR Basson

KLEYNHANS, Emma (Industrial Engineering)

The development of a policy analysis logic model to support public medicine availability initiatives in the context of VAN

The Visibility and Analytics Network (VAN), which takes the form of proven private sector operating models, aims to improve public sector medicine availability in sub-Saharan African countries from a supply chain perspective. This study supports the gap regarding the lack of policy insight into the enabling and hindering effect a country's policy and legal framework could potentially have on the operationalisation of its VAN. A policy analysis logic model was developed that addresses the policy-related gap and assists relevant VAN actors on how to analyse and develop policy-specific strategies that specifically align with their country's VAN and legal context.

Supervisor: Dr J van Eeden

Co-supervisors: Ms IH de Kock, Dr L Bam, Mr TE Llewellyn

KOLAWOLE, John Temitope (Civil Engineering)

The influence of rheology on the cracking of plastic concrete

Concrete possesses rheological and viscoelastic properties during its plastic phase, with settlement and shrinkage cracking impairing its serviceability and durability. This study linked the rheo-related properties of concrete, using rotational and dynamic shear rheometry and its plastic cracking behaviour. The early plastic phase of concrete was found to be dominated by shear self-settlement, influencing the plastic shrinkage and capillary pressure rate, which are also directly related to the yield stress and thixotropy. The ability of plastic concrete for stress relaxation and strain dissipation dictates its crack initiation, which tends to be strain-oriented with a pressure-insensitive form of ductile failure.

Supervisor: Dr R Combrink

Co-supervisor: Prof WP Boshoff

LOMBARD, Clint Daniel (Electronic Engineering)

Stochastic triangular mesh mapping

For a mobile robot to operate autonomously in general environments, it must be able to perceive, or map, its surroundings. In order to address shortcomings in existing mapping techniques, this study proposes the stochastic triangular mesh mapping technique – a novel probabilistic surface representation that can be efficiently and incrementally updated using a new inference algorithm. It demonstrated the efficacy of the map on both simulated and practical data, showing that the map is superior to comparable techniques. It further demonstrated that maps constructed in landmark-relative submaps are more accurate than maps using a global reference frame.

Supervisor: Dr CE van Daalen

MARAIS, Rian (Industrial Engineering)

Constructing a framework that facilitates technology transfer to sub-Saharan Africa: A healthcare perspective

Healthcare technology transfer aims to alleviate healthcare burdens in developing nations through a combination of acquisitions and collaborative technology development. As such, this study developed a conceptual framework as a guidance mechanism to contribute to the facilitation of health-related technology transfer ventures to and from sub-Saharan Africa. This framework was iteratively created by conflating the outcomes of a systematic conceptual literature review, a systematic comparative literature review, semi-structured interviews with industry experts, a survey with 89 respondents and three case studies. The conceptual framework will serve as a tool to guide technology managers through the dynamic process of technology transfer.

Supervisor: Prof SS Grobbelaar

Co-supervisor: Ms IH de Kock

MUVUNZI, Rumbidzai (Industrial Engineering)

Application of additive manufacturing for improved thermal management of hot sheet metal forming tools

Hot stamping tools are produced with cooling channels to extract heat from the blank during the forming process. The common method of producing the channels is straight drilling. However, if the part has a complex geometry, the straight channels cannot provide consistent cooling. In this study, additive manufacturing was used to produce a tool with conformal cooling channels, thereby taking advantage of the design freedom offered by additive manufacturing. An innovative hot stamping tool with conformal cooling channels was designed, manufactured and validated. According to the results, the manufactured tool has the potential to reduce cooling time by 29%.

Supervisor: Prof S Matope

Co-supervisor: Prof TM Harms

MWANIKI, Fredrick Mukundi (Electrical Engineering)

Modelling and performance evaluation of a pseudo-random impulse sequence for in situ parameter estimation in energy applications

This study proposes a pseudo-random impulse sequence as a novel wideband perturbation signal for system identification and parameter estimation in high-voltage, high-power applications. The time- and frequency-domain properties of the signal were mathematically modelled and simulated. It was shown that the signal exhibits excellent controllability of the spectral energy. An energy-efficient source topology was implemented to apply the pseudo-random impulse sequence under *in situ* operating conditions to power apparatus. A case study was conducted to determine the frequency responses and model parameters of a rural network. The results showed that the signal performs well for power network applications.

Supervisor: Prof HJ Vermeulen

REDELINGHUIS, Anro Johannes Hermanus (Mechatronic Engineering)

An architecture for the digital twin of a manufacturing cell

The digital twin – a digital representation of a physical object or system – is considered as an emerging technology for modern manufacturing in the context of Industry 4.0. This study developed and evaluated a novel reference architecture for the formation of digital twins. The developed architecture considers systems that comprise multiple vendors and stakeholders and supports retrofitting on legacy manufacturing systems. The architecture further aims to reduce complexity and enhance scalability by allowing for the aggregation of digital twins. The study shows that the architecture can support several roles that digital twins are foreseen to fulfil within Industry 4.0.

Supervisor: Dr K Kruger

Co-supervisor: Prof AH Basson

REED, Ryan (Industrial Engineering)

Toward a meta-methodology for real-world problem solving

This study entailed an investigation into the intricacies of real-world problem solving with the purpose of designing a meta-methodology for facilitating the resolution of such problems. This culminated in the development of methods designed to facilitate aspects of such an endeavour, including the mitigation of certain phenomena in the human psyche that often inhibit effective problem solving (i.e. cognitive and social biases). A second contribution was a mathematical model of the mechanisms that govern the competitive interaction of entities involved in the process of real-world problem solving, with the purpose of investigating the effectiveness of alternative strategies of competition.

Supervisor: Prof JH van Vuuren

SCHOONWINKEL, Daniel (Electronic Engineering)

Quantification and improvement of state consistency in a virtual environment under adverse network conditions

It is expected that fifth-generation network technology will increase the use of wireless communication systems. Media content will be wirelessly distributed to video-on-demand and interactive virtual and augmented reality systems. However, wireless communication is typically less reliable, requiring mechanisms to compensate for packet loss and network delay. This study quantified the effect of network conditions (such as typically experienced through wireless communication) on the state consistency (shared knowledge and experience) of a virtual environment. It was found that wireless could reduce state consistency, but that network coding could be used as an erasure code to improve reliability.

Supervisor: Prof HA Engelbrecht

SCHURER, Maximilian Juan (Industrial Engineering)

Towards the interoperability of spontaneous reporting systems in pharmacovigilance: A maturity model approach with sociotechnical system focus

It is universally accepted that all medicines have the potential to cause adverse drug reactions (ADRs). Pharmacovigilance involves the medical assessment of such ADRs. The timely generation and collection of this ADR data are paramount in facilitating statistical analysis that enables decision-makers to improve the overall safety of post-marketing authorisation pharmaceutical products. A novel capability maturity model (CMM) was developed for use by pharmaceutical regulatory authorities to improve the interoperability of product safety information systems across the global pharmacovigilance landscape. The CMM can be used to strategically guide organisational change by improving the adoption of technical and organisational standardisation initiatives.

Supervisor: Prof L Louw

Co-supervisors: Dr L Bam, Ms IH de Kock

SNYMAN, Hendrik Andries (Industrial Engineering)

Towards a strategy formulation framework that supports small- to medium enterprises (SME) survival and growth

The survival and growth of new ventures and small- to medium enterprises (SMEs) are ultimately functions of strategic fit, the balance between an opportunity external to the firm and internal control over resources to exploit the opportunity. Strategic choice defines the unique set of obstacles that will be faced by the firm, and therefore strategic planning is critical to its success. The study developed a framework adapted to the characteristic shortcomings of new ventures and SMEs to support strategy formulation, with the process effecting the discovery of knowledge and the means to overcome obstacles to achieve strategic fit.

Supervisor: Mr KH von Leipzig
Co-supervisor: Prof CSL Schutte

SSEBABI, Brian (Mechanical Engineering)

Development of a micro-gas turbine for central receiver concentrating solar power systems

A prototype solar-hybrid gas turbine system was developed for potential use in a concentrated solar power plant. The micro-gas turbine was designed, built, tested and characterised. The obtained performance characteristics were used to validate a theoretical model of the solar-hybrid gas turbine. Although the experimental results indicated very low efficiencies, the theoretical model was used to show that the system's efficiency can be improved substantially with the addition of a recuperator. This work will form a basis for further solar gas turbine development as part of the solar thermal energy research initiative at Stellenbosch University.

Supervisor: Prof SJ van der Spuy
Co-supervisor: Prof F Dinter

SWANEPOEL, Riccardo Marlouw (Chemical Engineering)

Improving the fluid phase-boundary predictions of (solvent + LLDPE) systems of commercial interest

The production of linear low-density polyethylene (LLDPE) through the solution process requires knowledge of the conditions under which (solvent + LLDPE) systems undergo phase transitions. As these conditions are difficult to measure, this study improved their prediction through a combined experimental, theoretical and phenomenological approach. This included determining the influence of α -olefins on (α -olefin + n-hexane + LLDPE) systems' phase boundaries and the boundaries' dependence on solvent properties, an evaluation and reparameterisation of the copolymer statistical associating fluid theory equation of state and a Clapeyron equation-based phenomenological method for the online prediction of (solvent + LLDPE) phase boundaries.

Supervisor: Prof CE Schwarz

TAYLOR, Cameron Carden (Electronic Engineering)

Robust control of a quadrotor with a suspended payload

This study entailed the design of a novel robust flight control system for a quadrotor unmanned aerial vehicle carrying a cable-suspended payload. The flight control system accommodated significant uncertainties in the quadrotor thrust, cable length and payload mass. The proposed controller provided robust stability with a guaranteed minimum stability margin for any plant in the uncertain set and enabled velocity reference tracking for the quadrotor vehicle, while adding damping to the payload swinging motion. The controller was designed using a novel modified H^∞ extended loop-shaping design procedure that utilises H^∞ optimisation and the v-gap metric.

Supervisor: Dr JAA Engelbrecht

THEART, Rensu Petrus (Electronic Engineering)

Virtual reality-assisted fluorescence microscopy data visualisation and analysis for improved understanding of molecular structures implicated in neurodegenerative diseases

The visualisation and analysis of three-dimensional fluorescence microscopy datasets are commonly performed in two dimensions, but this can diminish the accuracy of the analysis. This study presents a virtual reality-based system that allows three-dimensional precision region of interest selection and colocalisation analysis as well as the visualisation of spatial correlation between the underlying fluorescence channels. This was used to develop a new method that automatically localises and quantifies mitochondrial fission, fusion and depolarisation events in three-dimensional time-lapse sequences. These techniques were shown to offer new insights into the molecular structures implicated with Alzheimer's disease.

Supervisor: Prof TR Niesler
Co-supervisor: Prof B Loos

VAN DER SPUY, Pierre Francois (Civil Engineering)

Derivation of a traffic load model for the structural design of highway bridges in South Africa

This study set out to derive a new traffic load model for the design of highway bridges in South Africa by investigating real-life traffic data from multiple recording stations. The principles of extreme value statistics allowed for the derivation of a static load model by fitting a censored generalised extreme value distribution. A novel method is presented for the multiple presence of vehicles to determine lane factors that can be used to design bridges with multiple lanes. Safety of the bridges under load is ensured by the partial factor calibration along with a model validation study.

Supervisor: Prof R Lenner

VAN HEERDEN, Shane Andrew (Industrial Engineering)

A framework for conducting road accident risk evaluations using network spatial analysis and machine learning techniques

With enormous losses to society resulting from road accidents, their prevention and severity reduction have been an active area of research focus for many decades. This study proposes a modular framework for quantifying and characterising the road accident risk experienced along a road segment or at a road junction, where risk, in this context, is modelled as both the expected rate and the severity of being involved in a road accident, by employing techniques found in network spatial analysis and machine learning. The proposed framework was applied to a real-world case study to demonstrate its intended functionality.

Supervisor: Prof JH van Vuuren
Co-supervisor: Prof SS Grobbelaar

VAN ROOYEN, Algurnon Steve (Civil Engineering)

Mechanics and durability of surface-treated foamed concrete

The study contributes to elevating foamed concrete (FC) from a low-strength, filling and insulating material to a structural engineering application. By incorporating high volumes of fly ash industrial waste and well-dispersed, regular, dominantly micro-scale air voids, strengths appropriate for load-bearing structures were achieved. By combining the superior thermal insulating properties, low self-weight and improved mechanical qualities, the study demonstrated that FC is appropriate as construction material for facades of low-energy buildings. The study further improved fracture mechanics characteristics to increase the bond of FC with reinforcing steel and introduced surface treatment agents for protection of the steel from carbonation and chloride-induced corrosion.

Supervisor: Prof GPAG van Zijl

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Ingenieurswese
Master of Engineering

Albertus, Grant John (Extractive Metallurgical Engineering)
 Allsopp, Shane Geoffrey (Engineering Management)
 Apiyo, Davina-Nelson (Chemical Engineering)
 Banza, Mijibu Junior (Mechanical Engineering)
 Basson, Marno (Extractive Metallurgical Engineering)
 Basson, Suzanne Esther (Civil Engineering) (*cum laude*)
 Beswick, Robey Cecil (Electronic Engineering)
 Bezuidenhout, Bradley (Mechanical Engineering) (*cum laude*)
 Bhagwan, Vivek (Industrial Engineering) (*cum laude*)
 Birth, Annika (Electrical Engineering) (*cum laude*)
 Boehm, Max (Engineering Management) (*cum laude*)
 Böning, Pieter Francois (Electronic Engineering)
 Botha, Marné Christoff (Electrical Engineering)
 Braune, Erika Gertrud (Civil Engineering) (*cum laude*)
 Bresler, Franciena Helena (Mechanical Engineering)
 Brooks, Johannes Andreas (Civil Engineering)
 Brynard, Mia-Anne (Civil Engineering)
 Burcher-Jones, Jordan David (Electronic Engineering) (*cum laude*)
 Chibwe, Chalwe (Extractive Metallurgical Engineering)
 Chimphango, Anderson (Chemical Engineering)
 Chung, Sung-Bok (Mechatronic Engineering) (*cum laude*)
 Coetzee, Huibert (Civil Engineering)
 Coetzee, Jaco (Civil Engineering) (*cum laude*)
 Cronje, George Frederick (Engineering Management) (*cum laude*)
 Cronje, Izak Adolf (Chemical Engineering)
 Cronjé, Nadine (Civil Engineering)
 Crouch, Melissa Lauren (Civil Engineering)
 Daniel, Francisca Muriel (Electrical Engineering) (*cum laude*)
 De Bondt, Franco Hibbard (Civil Engineering)
 De Lange, Lydia (Electronic Engineering) (*cum laude*)
 De Villiers, Daniel Bernard Beaumont (Electronic Engineering) (*cum laude*)
 De Wet, Philip (Civil Engineering)
 Diem, Michael (Engineering Management) (*cum laude*)
 Dietrich, Fabian Tobias (*cum laude*)
 Dorrington, Bella Ann (Chemical Engineering)
 Du Plessis, Marno (Industrial Engineering) (*cum laude*)
 Du Toit, Francois Johan (Civil Engineering)
 Du Toit, Pierre Francois (Civil Engineering)
 Du Toit, Zainodean (Electronic Engineering)
 Edlmann, Frederick Robert Peter (Engineering Management) (*cum laude*)
 Eloff, Ryan Peter (Electronic Engineering) (*cum laude*)
 Erasmus, Anthonie Philippus (Electronic Engineering) (*cum laude*)
 Falck, Mardi (Civil Engineering)
 Fourie, Christian (Industrial Engineering)
 Fourie, Dylan Andrew (Civil Engineering) (*cum laude*)
 Fourie, Stephen Junior (Civil Engineering) (*cum laude*)
 Geldenhuys, Cheri (Mechanical Engineering)
 Geldenhuys, Isabella Johanna (Extractive Metallurgical Engineering) (*cum laude*)
 Govender, Kerisha (Civil Engineering) (*cum laude*)
 Govender, Preyin (Mechanical Engineering)
 Govender, Priyashnie (Chemical Engineering)
 Groeneveld, Llewellyn Wallace (Mechanical Engineering) (*cum laude*)
 Grosse Erdmann, Julian (Engineering Management) (*cum laude*)
 Heathcote, Terry Wayne (Engineering Management)
 Higgo, Matthew Ray (Industrial Engineering) (*cum laude*)
 Huysamen, Biaccé (Industrial Engineering)
 Jacobs, Eugene (Mechanical Engineering)
 James, Gerard (Chemical Engineering)
 Jan, Muaz Ahmad (Mechanical Engineering)
 Jansen van Rensburg, Merten Secundus (Engineering Management)
 Joubert, Ebard (Mechatronic Engineering)
 Joubert, Izak Johannes (Mechatronic Engineering)
 Jurgens, Daniel Francois (Civil Engineering)
 Kearney, Mike-Alec (Mechanical Engineering)
 Klink, Hans-Peter (Civil Engineering)
 Knox, Ashley Jade (Civil Engineering)
 Koegelenberg, Marianca (Engineering Management) (*cum laude*)
 Kondo, Gerson Kautane Nghimelenga (Mechanical Engineering)
 Kotzé, Mariska (Civil Engineering)
 Kriel, Carlie (Chemical Engineering)
 Kriel, Scott Graham Hilton (Electronic Engineering) (*cum laude*)
 Kruger, Dewald Johannes (Civil Engineering)
 Lambert, Matthew (Chemical Engineering)
 Landman, Carel (Electrical Engineering)
 Last, Petri-Johan (Electronic Engineering)
 Leigh, David Ken (Mechanical Engineering) (*cum laude*)
 Leuvennink, Bernard Cornelius (Industrial Engineering)
 Lochner, Jacobus Nicolaas (Electronic Engineering)
 Löffel, Stefan Alexander (Civil Engineering)
 Lombaard, Jaretha (Civil Engineering) (*cum laude*)
 Lombard, Francois Nicolaas (Electronic Engineering)
 Louw, Josias Albertus (Electrical Engineering)
 Louw, Wilhelm Nicholas (Engineering Management)
 Malan, Francina (Industrial Engineering) (*cum laude*)
 Marggraff, Pascal (Mechanical Engineering)
 Martin, Jonathan William (Civil Engineering)
 Maseko, Bongani Bright (Electronic Engineering) (*cum laude*)
 Mazibuko, Nokuthula Mandy Antonia (Civil Engineering) (*cum laude*)
 Mc Gregor, Felix Du Plessis (Electronic Engineering) (*cum laude*)
 Mdakane, Lethiwe Philile (Electrical Engineering)
 Meiring, Zander (Mechanical Engineering) (*cum laude*)
 Mondlane, Helídio Soares (Mechanical Engineering)
 Moodley, Seranya (Mechanical Engineering) (*cum laude*)
 Moolman, Benjamin Stephanus (Engineering Management)
 Moorcroft, Jacobus Johannes (Chemical Engineering) (*cum laude*)
 Mostert, Hermanus Albertus (Civil Engineering)
 Mphogo, Dinorego Collen (Electronic Engineering)
 Msutu, Thembela Lumumba (Civil Engineering)
 Murwira, Fanuel (Civil Engineering)
 Naidoo, Omeshan (Extractive Metallurgical Engineering)
 Naudé, Ashley Kendal (Electronic Engineering)
 Nortje, Andre Dylan (Electronic Engineering) (*cum laude*)
 Nortje, Morne Andries (Engineering Management)
 Okere, Emmanuel Ekene (Electronic Engineering) (*cum laude*)
 Oosthuizen, Helgard La Grange (Electronic Engineering) (*cum laude*)
 Panchbhaya, Ziyauddin (Mechanical Engineering)
 Petersen, Renee (Civil Engineering)
 Piek, Jacques (Mechanical Engineering)
 Pienaar, Eugenie (Civil Engineering) (*cum laude*)
 Pottinger, Ryan Mitchell (Chemical Engineering)
 Pretorius, Ruan (Chemical Engineering) (*cum laude*)
 Rademeyer, Jacobus Johannes (Electronic Engineering)
 Rae, Gordon Charles (Mechanical Engineering)
 Reynard, Matthew Joshua (Electronic Engineering)
 Richardson, Louis Nagington (Mechanical Engineering)
 Robinson, Daniel Leonard (Electronic Engineering)
 Rogers, Daran John (Civil Engineering) (*cum laude*)
 Rohrs, Oscar (Mechanical Engineering)
 Rolo, Monica Celestina (Industrial Engineering)
 Roux, Angelique (Electrical Engineering) (*cum laude*)
 Roux, Henricus Jacobus Storm (Electrical Engineering) (*cum laude*)
 Saayman, Ruben Lourens (Civil Engineering)
 Sadie, Adriaan (Electronic Engineering) (*cum laude*)

Schmidt, Jacob Michal (Civil Engineering) (*cum laude*)
Schultz, Sulizma (Civil Engineering)
Sebopa, Mogau (Civil Engineering)
Simelane Dlamini, Nosipho Sbongile Lorraine (Mechanical Engineering)
Simjee, Yusuf (Civil Engineering)
Smit, Andries Petrus (Electronic Engineering) (*cum laude*)
Smit, Jeanette (Civil Engineering) (*cum laude*)
Smit, Mynhardt (Mechanical Engineering)
Smith, Miguel Hamilton (Electronic Engineering)
Snyman, Jacobus Petrus (Civil Engineering) (*cum laude*)
Starke, Megan Marya (Mechanical Engineering) (*cum laude*)
Stevens, Ryan Gareth (Mechanical Engineering) (*cum laude*)
Stimela, Zizo (Civil Engineering)
Stone, Lorna (Civil Engineering) (*cum laude*)
Sullivan, Scott (Mechanical Engineering)
Tredoux, Carlie (Civil Engineering) (*cum laude*)
Tshikwand, Georgino (Mechanical Engineering)
Uys, Jakobus van Niekerk (Engineering Management) (*cum laude*)
Van Breda, Daniel John (Chemical Engineering)
Van der Merwe, Bernardus Johannes (Electronic Engineering) (*cum laude*)
Van der Spuy, Liam Roy (Civil Engineering) (*cum laude*)
Van der Westhuizen, Salomie (Chemical Engineering) (*cum laude*)
Van Heerden, Victoria-Lea Val (Industrial Engineering)
Van Romburgh, Kenny (Mechanical Engineering) (*cum laude*)
Van Zijl, Christof Moolman (Mechanical Engineering) (*cum laude*)
Van Zyl, Christo Jasper (Engineering Management) (*cum laude*)
Van Zyl, Erasmus Johannes (Mechanical Engineering)
Vegter, Johannes Roelf (Mechatronic Engineering)
Venter, Adam John (Mechanical Engineering) (*cum laude*)
Visagie, Jurie Wynand (Civil Engineering)
Visser, Divan (Civil Engineering) (*cum laude*)
Vlok, Thomas Leslie Stewart (Civil Engineering)
Vorster, Johannes Gysbertus (Mechatronic Engineering)
Vosloo, Christoffel Jacobus (Mechanical Engineering)
Wache Ngateu, Gaele Vanessa (Electronic Engineering)
Waswa, Lewis Sakwa (Electrical Engineering)
Werle Van der Merwe, Andreas (Mechatronic Engineering) (*cum laude*)
Wium, Elsmari (Mechanical Engineering) (*cum laude*)
Yoko, Matthew Jonathan (Mechanical Engineering) (*cum laude*)

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

Baccalaureus in die Ingenieurswese
Bachelor of Engineering

Abrahams, Francelyn Janice (Industrial Engineering)
 Armstrong, Jonathan Iain (Mechanical)
 Baartman, Quinton (Civil)
 Blignaut, Fouché (Mechatronics)
 Botha, Stefan (Mechatronics)
 Bredell, Suzahn (Industrial)
 Brown, Conal Patrick (Industrial Engineering)
 Calitz, Stephan (Civil)
 Carstens, Godfried Johannes (Mechanical)
 Carstens, Rain Bailey (Civil)
 Crockart, Ivan Calitz (Mechatronics)
 De Jager, Terence Terblanche (Industrial)
 De Villiers, Andrew Robert (Electrical and Electronic)
 De Villiers, Christopher Andrew (Electrical and Electronic)
 De Waal, Arend Casper (Electrical and Electronic)
 Devine, Brent Richard (Electrical and Electronic)
 Dibden, Alexander Ruthvin (Mechatronics)
 Dijkstra, Stephan (Mechanical)
 Du Plessis, Jarred (Mechanical)
 Du Preez, Jacques (Industrial)
 Du Preez, Philippus Petrus Deetlefs (Mechatronics)
 Du Toit, Albie Johann (Chemical)
 Du Toit, Henri Conradie (Industrial)
 Du Toit, Joubert (Industrial)
 Erasmus, Marthinus (Civil)
 Fourie, Christiaan Johannes (Electrical and Electronic)
 Fritz, Candice Corrisa (Chemical)
 Frohling, Jesse Abraham Michael (Industrial)
 Goosen, Ockert Johann (Mechatronics)
 Hershaw, James Robert (Electrical and Electronic)
 Hlasoa, Lerotholi John (Civil)
 Janse van Rensburg, Jeanri (Civil)
 Jeffery, Sam John (Mechatronics) (*cum laude*)
 Joubert, Shaun (Industrial)
 Kariel, Raees Ahmed (Electrical and Electronic)
 Khan, Afroz (Mechatronics)
 Kotze, Jacob Carl (Civil)
 Kovats, Florian (Chemical)
 Le Roux, Anri (Mechanical)
 Le Roux, Jana Hendrina (Civil)
 Lehong, Ngoako Harry (Mechanical)
 Lingenfelder, Hans Jurgen (Industrial)
 Loedolff, Gina Marietta (Civil)
 Loots, Hendrik Johannes (Civil)
 Louw, Arnold (Civil)
 Maart, Lenaé (Mechatronics)
 Marks, Joshua Kendall (Mechatronics)
 Martin, Kim (Mechatronics)
 Masindi, Phathutshedzo (Civil)
 Mbiza, Someleze (Mechatronics)
 Mogale, Setekoane Phillemon (Civil)
 Mokhudu, Semakaleng Eddy (Electrical and Electronic)
 Mostert, Floris Johannes (Industrial)
 Mshibe, Thobeka (Chemical)
 Mudzamba, Lewis (Civil)
 Ngobeni, Nhlalala Amond (Civil)
 Ntlalombi, Zubenathi (Mechanical)
 Nuuyoma, Saima Kagwedha Magano (Chemical)
 Nyachiya, Tinotenda Lorraine (Industrial)
 Oosthuizen, Gustav (Industrial)
 Oosthuizen, Jodri (Mechatronics)
 Palanduz, Deniz Robert (Mechanical)
 Pearce, Aimee Louise (Chemical)
 Pekema, Manatsashe (Mechanical)
 Pillay, Naison Noel (Civil)
 Pretorius, Gerhardus Petrus (Civil)
 Prinsloo, Ruben Diederik (Mechatronics)
 Qacha, Bohlajana (Civil)
 Raga, Vivek Vinod (Chemical)
 Redelinghuys, Zaan (Industrial)
 Riekert, Adrijaen (Mechatronics)
 Roycroft, Brandon (Industrial)
 Rust, Dirk (Mechanical)
 Ruzario, Souzah Emmanuel (Electrical and Electronic)
 Scheepers, Emile (Mechanical)
 Schlebusch, Teunis Gilbert (Chemical)
 Scott, Nicola (Electrical and Electronic)
 Serfontein, Jan Gerhard (Mechanical)
 Skews, Joshua Dimitri (Mechatronics)
 Smit, Kara (Industrial)
 Smit, Luke (Chemical)
 Snyman, Rickert (Electrical and Electronic)
 Spangenberg, Izak (Industrial)
 Staal, Joke (Industrial)
 Stapelberg, Ian Paul (Industrial)
 Stewart, Alex Leith (Industrial)
 Strydom, Steve (Chemical)
 Swanepoel, Albert Edward (Mechatronics)
 Taljaard, Carl Magnus Lönngren (Civil)
 Teseling, Gerardus Hielke (Civil)
 Theunissen, Daniel (Electrical and Electronic)
 Tsotetsi, Kukie Yvonne (Mechanical)
 Tutt, Nicholas Jordan (Mechanical)
 Van den Heever, Chanel (Mechanical)
 Van der Westhuizen, Luan Paul Jacobus (Mechanical)
 Van Niekerk, Taylor Matthew (Industrial)
 Van Rensburg, Brandon Burger (Civil)
 Van Rooyen, Gerard Tinus (Civil)
 Van Tonder, John Dean (Mechanical)
 Van Zyl, Hendrik Jakobus Gildenhuys (Industrial)
 Venter, Van Zyl (Industrial)
 Vonco, Okuhle (Civil)
 Weidemann, Francois Rousseau (Industrial)
 Williams, Nicola Hayley (Chemical)
 Wingard, Jacques Johannes (Mechanical)
 Witbooi, Bjoghan (Chemical)
 Wright, Gary (Civil)



Fakulteit
Krygskunde

Faculty
Military Science

DOKTORSGRAAD | DOCTORATE

**Doktor in die Wysbegeerte
Doctor of Philosophy**

GARCIA, Antonio (Military History)

General Louis Botha: Farmer, soldier, statesman, 1862–1919

Louis Botha (1862–1919) is a towering figure on the South African historical landscape. Yet, his life and the complexity of his times have been treated poorly by his biographers. This study bridges that gap. It provides the first critical examination of his political and military career against the backdrop of South Africa's national and imperial past. This is a full-length portrait of a complex man. Botha had many hues. He was lionised by some for his military prowess, political nous and administrative competence, but he was concurrently badly flawed and wavering at times. This study is a reappraisal of a man that was very human, imperfect, inconsiderate and insecure, but also charming, attractive, emotionally intelligent and confident.

Supervisor: Lt Col (Prof) IJ van der Waag

Co-supervisor: Dr FL Monama

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

**Magister in die Krygskunde
Master of Military Science**

Smith, Chrismar (Military Science)

**Nagraadse Diploma in Verdedigingstudie
Postgraduate Diploma in Defence Studies**

Apollis, Rendle
Kapp, René
Mostert, Enela Delina
Remmeley, Quinton Bernard Mervin
Smith, Johannes Hedrikus

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

Baccalaureus in die Krygskunde
Bachelor of Military Science

Ketsekile, Mpho Elizabeth
Khoza, Tshepiso Ephenia
Maasdorp, Quintin Alfredo
Maphutse, Rethabile Raine Alicia
Mokatedi, Prince Kamohelo
Nduku, Olebogeng Emmanuel
Ngcobo, Mbali
Ngqungwana, Lonwabo Khakaletu
Nkosi, Bongumusa Bhekizizwe



Fakulteit
Lettere en Sociale Wetenschappen

Faculty
Arts and Social Sciences

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte
Doctor of Philosophy

AMIMO, Maureen (English Studies)

Poetics and politics in contemporary African travel writing

This study engaged in an important critical re-evaluation of the genre of travel writing through a study of contemporary African authors' travel narratives about Africa. It is suggested that the travelogue is a genre that has the potential to deconstruct dominant ideas about culture, society and place. Through a study of selected texts from a range of countries on the continent that approach the genre in very different ways, the study tracked the authors' varied responses to the weighty colonial legacy of the genre as well as their subversive and transformative experiments with form.

Supervisor: Prof LA Green

Co-supervisor: Prof GA Musila

BAILEY, Tracy Gillian (Science and Technology Studies)

The provision and influence of evidence-based policy advice: A case study of the National Advisory Council on Innovation

This research was a case study of South Africa's National Advisory Council on Innovation, which is mandated to provide evidence-based policy advice to the Minister of Science and Technology. The study sought to uncover how the Council's institutional and organisational design, and the policy context within which it operates, have played a role in shaping and constraining the provision of advice and the organisation's influence on the policy process. The study demonstrates that inadequate internal capacity, threats to independence, negative perceptions of credibility and legitimacy, and an uncoordinated policy environment have contributed to a dilution of the Council's potential influence on policy.

Supervisor: Prof J Mouton

Co-supervisor: Prof N Cloete (external)

BERGHOFF, Robyn (General Linguistics)

Syntactic processing in English-Afrikaans bilinguals

This study focused on the psychological processing of syntactic properties in second-language speakers of English with Afrikaans as native language, using methods such as self-paced reading and eye tracking. The findings showed that syntactic processing is governed by age of English language acquisition and bilingualism. The study makes two major contributions: Firstly, it highlights the complexities of second-language acquisition in a heterogeneous multilingual context, and secondly, being the first of its kind, it breaks new ground in the South African context and lays an important foundation for the field of psycholinguistics in the country.

Supervisor: Prof ENE Bylund Spångberg

BREWIS, Carmen (Vertaling)

Die produksienetwerk van 'n getolkte lesing binne die universiteitskonteks: 'n Etnografiese ondersoek

Hierdie studie het 'n ondersoek behels na opvoedkundige tolking aan die hand van drie hoofaspekte van 'n getolkte lesing: die akteurs betrokke by die tolking, tolking as prosen en die wisselwerking tussen die akteurs in die tolkproses. Die akteursnetwerkteorie en 'n etnografiese navorsingstrategie is gebruik om 'n binneperspektief te kry op die geleefde werklikheid van die tolk in die studiekonteks. Die studiedata toon dat die tolkprodukt die resultaat is van 'n prosen van netwerkformasie. Binne hierdie netwerke word die tolk geaktiveer of gemobiliseer deur 'n verskeidenheid menslike en niemenselike akteurs. Die aanbevelings van die studie behels 'n absolute herbelyning van die netwerk waarbinne tolke moet funksioneer, vanaf die lesing tot by die instelling.

Promotor: Prof AE Feinauer

Medepromotors: Proff L van Doorslaer (ekstern), HM Lesch

CILLIERS, Judy-Ann (Philosophy)

Stories of us and them: Xenophobia and political narratives

The aim of this study was to make sense of xenophobia as a specific idea of belonging and foreignness by analysing xenophobia in terms of its origins, expressions, harms and relation to other forms of discrimination, such as racism. Xenophobia is a product of the prejudices that come with ingroup-outgroup differentiation, our understandings of our group identities and insecurity about our place in the world. Our identities are shaped by the narratives we tell about ourselves and others, about who belongs and who does not. Rethinking political narratives about belonging, citizenship and borders can be an effective tool in the anti-xenophobia project.

Supervisor: Prof V Roodt

CRUISE, Adam John (Philosophy)

The value of being wild: A phenomenological approach to wildlife conservation

This study demonstrates that the dominant wildlife conservation paradigm, namely sustainable development, is failing on several fronts. It does not live up to its own aims of serving overall human well-being, it fails to protect species against extinction, it destroys bio-diversity, and, most seriously of all, it remains stuck in a relentlessly anthropocentric model of nature. The study proposes an alternative eco-phenomenological model of wildlife conservation based on the phenomenology of Maurice Merleau-Ponty. Only this model can show us why being wild is an important value in itself, extending beyond so-called wildlife to ultimately include all life forms on Earth.

Supervisor: Prof HL du Toit

DANDE, Innocent (History)

A social history of African dog-owners in Zimbabwe, 1890–2018

This study examined the history of human–dog relations in Southern Rhodesia and Zimbabwe from 1890 to 2018. From the pre-colonial period, African-owned dogs have strayed between nature and culture, between wild and tame, between material bodies and spiritual beings or political metaphors. The study focused on how crises, such as outbreaks of rabies, altered human–dog and indeed human–human relations. It explored why colonial conservation ideologies encouraged Africans to keep 'better and fewer' dogs and what that meant for Africans and their dogs. The study further analysed how ideas of 'dog breeds' and 'purity' in dog breeding changed, examining the extent to which Africans accepted new ideas of dog breeds.

Supervisor: Prof SS Swart

DORO, Elijah (History)

A socio-environmental history of commercial tobacco farming in Southern Rhodesia and Zimbabwe, c.1893–2000

This study analysed the relationship between tobacco farmers (both black and white) and the environment in Southern Rhodesia and Zimbabwe, showing how this relationship shaped local ecologies, agrarian systems, socio-economic and political landscapes and even the human body over time. It analysed the consequences of international pressures (such as the Great Depression, the USA's Dust Bowl and global environmentalism) together with domestic changes (such as the rise of conservation ideologies within white settler agriculture). Finally, the study examined the changing contemporary socio-environmental dynamics of tobacco production in Zimbabwe beyond 2000 and the prospects of using the lessons from history to curb the global tobacco epidemic.

Supervisor: Prof SS Swart

DU TOIT, David (Sociology)

Cleaning up: A sociological investigation into the use of outsourced housecleaning services

In South Africa, the nature of paid domestic work is changing from full-time, live-in and live-out, to part-time and temporary domestic work, to a new trend of domestic outsourcing. However, research on paid domestic work often fails to focus on the growth of housecleaning services. Accordingly, it is unclear how housecleaning services operate, what factors contribute to their usage and who uses them. To fill this void, this study examined outsourced housecleaning service firms from the perspective of clients, rather than domestic workers. The study found that not only is domestic work outsourced, but also the emotional labour associated with dependency and responsibility of employment.

Supervisor: Prof LPT Heinecken

Co-supervisor: Mr JH Vorster

DÜRR, Elna (Psychology)

A qualitative, interpretive study exploring the well-being of slaughterers: A comparison between Jewish, Muslim and secular slaughterers

Slaughtering animals for meat consumption is a contentious issue and associated with physical and psychological challenges. This qualitative study explored the influence of slaughtering on the well-being of slaughterers from the perspectives of halaal, secular and kosher slaughterers, their family members and abattoir managers. The findings revealed that slaughtering was physically, psychologically and emotionally burdensome. Good communication, respect and prayer helped slaughterers to cope with daily challenges. Family, friends and colleagues were important sources of support. This study has important implications for abattoir work and employee well-being in South Africa.

Supervisor: Dr Z Kafaar

Co-supervisor: Prof LC Hoffman (external)

FOURIE, Reinhardt (Comparative Literature)

Entanglements of the English and Afrikaans literary systems: Reading epitexts on the works of Marlene van Niekerk

The focus of this study was 'epitexts' on the work of author Marlene van Niekerk, which include popular and critical reviews of her work as well as scholarly research published on her work. Van Niekerk is considered both an author writing in Afrikaans and an author translated into English, with a concomitant focus on her related position in the larger system of a 'national' South African literature. With the focus on Van Niekerk's oeuvre, this study observed the nature of the interconnectedness between two of South Africa's literary systems as they developed into and exist in the present.

Supervisor: Prof AG Visagie

GHAYEM, Nina (Music)

Sounds of suffering: A creative response to human suffering and emotional pain in the form of a contemporary musical composition

This study contributes to the field of practice-based research in music. With a focus on the topic of human suffering, theoretical and creative work was integrated in a ground-breaking way so as to provide a novel view on the subject from the perspective of the researcher as composer. Devices that composers developed over past centuries to express various forms of agony are now considered archaic. In a creative response to this phenomenon that is contemporary, musically sensitive and stylistically appropriate, the study explored the unique potential of the sounds of actual human voices expressing pain and suffering towards realising a musical composition.

Supervisor: Prof H Roosenschoon

Co-supervisor: Prof WA Lüdemann

HARRISON, Carmen (Psychology)

Psychological strengths mediating the stress-coping experience: Implications for mental health in school-going adolescents from low-income communities of the Cape Metropole

This mixed-methods study explored the influence of psychological strengths on the mental health of school-going adolescents living in conditions characterised by socio-economic adversity in the Cape Metropole. Using structural equation modelling and thematic analysis as data analytical tools, psychological strengths (self-esteem, perceived social support and resilience) were found to have a protective effect on the mental health of these adolescents. The findings have practical implications for interventions aimed at promoting adolescent mental health: Priority should be given to the augmentation of self-esteem, social support-building strategies and levels of resilience. Future studies could focus on establishing pathways through which the psychological strengths would be amplified.

Supervisor: Prof NZ Somhlaba

Co-supervisor: Prof HS Loxton

HARTWELL, Leon (Political Science)

The mediation dilemma and the utility of mediation in conflict resolution: A case study approach

The 'give war a chance' approach has become a prominent voice, arguing that non-intervention (letting the conflict die a 'natural' death) is preferable to intervention through mediation. The claim is that mediation exacerbates conflict. This study challenges the above perspective. It argues that success or failure is not merely determined by mediation. The study demonstrates that outcomes are dependent on a number of core factors, including the players (adversaries, influencers and mediators), context, issues and strategies. Case studies from the conflicts in Bosnia and Rwanda were used to test the relationship between these factors and outcomes.

Supervisor: Prof AJ Leysens

Co-supervisor: Prof U Engel (external)

JONGMAN, Kgomotso (Social Work)

The role of social workers in promoting entrepreneurship among the youth in Botswana

Unemployment statistics among the youth in Botswana are higher than the country's general unemployment statistics. In this study, social work in Botswana was contextualised and theories of positive youth development and entrepreneurship within a social development paradigm were analysed and synthesised, and ultimately ontologically cemented in an interpretivist paradigm. Discourses of frontline social workers in Botswana on their role in promoting entrepreneurship among the youth in Botswana were captured. Concrete recommendations are offered to the Botswana Ministry of Youth Empowerment, Sports and Culture Development, the academic community and other youth worker stakeholders regarding the role of social work in promoting youth development and entrepreneurship.

Supervisor: Prof LK Engelbrecht

KAPLAN, Steven Mohandas (Lexicography)

A theoretical model for the preparation of an inclusive and bias-free expression dictionary

Inclusive and bias-free expression is crucial for effective interpersonal relations, because language, culture and society are inextricably intertwined. Despite the widespread biased and exclusive expression in English, general dictionaries fail to alert users to this usage. This study utilised a sociolinguistic framework to identify and describe biased and exclusive usage in English, focusing on some of the origins and manifestations of oppression and othering. It remedies the lack in research into inclusive and bias-free expression dictionaries by providing a theoretical model for the preparation of a dictionary focused on biased and exclusive expression, providing users with a trusted lexicographical source.

Supervisor: Prof RH Gouws

LIRU, Pauline (Sociology)

The influence of climate change on the livelihoods of women involved in rural agriculture in Kakamega County, Kenya

The influence of climate change in sub-Saharan Africa is widespread. Kenya is overburdened by negative climatic effects due to an overreliance on natural resources for livelihoods. The exposure of rural women farmers to frequent climatic shocks in Kakamega Kenya is exacerbated by their limited access to various forms of capital. While literature depicts African women as vulnerable victims of climate change, the study shows that women are able to use their own agency to adapt and build resilience in order to mitigate the effects of climate change. However, their voices as agents of change are often limited by the patriarchal culture that marginalises women farmers.

Supervisor: Prof LPT Heinecken

LUTOMIAH, Agnes Omulyebi (Science and Technology Studies)

An evaluation of the science system in Kenya

This study constitutes the first comprehensive scientometric assessment of the state of science in Kenya. Using a case study research design, the study combined historical methods, scientometrics and bibliometric indicators and secondary analysis of survey data. The study found that although the Kenyan science system has witnessed an increase in scientific output, international collaboration and citation impact, the country remains too dependent on foreign funding, with the result that human resource development for science and technology remains weak. The biggest challenge for the Kenyan government is to increase its expenditure on research and development in the country.

Supervisor: Prof J Mouton

MAKONE, Itai (Political Science)

A critical assessment of the conceptualisation of political risk analysis for hybrid regimes: The case of Zimbabwe

Political risk analysis (PRA) for foreign investors was assessed in this study for the possibility of measurement, using principles of the hybrid regime. An analytical tool was developed to consider the relevance of the traditional perceptions of PRA in hybrid regimes. Zimbabwe was the selected case, from 1990 to 2018. Twenty-eight key informants from six categories of respondents were interviewed. The findings confirmed the significance of the traditional conceptual perceptions of political risk; however, these were less stringently applied in contemporary times. Furthermore, hybridity is fluid, and not stagnant. Within a single state, levels of political risk will differ depending on the type of hybrid regime.

Supervisor: Dr D Lambrecchts

MANYANI, Charmaine Rudo Sanelisiwe (Sociology)

From livestock to game farming: Farmers' understandings of land use changes, sustainable agriculture and biodiversity conservation in the Ubuntu Municipality, South Africa

Commercial game farming in South Africa has been praised for promoting sustainable agriculture and criticised for manipulating conservation narratives to 'greenwash' the industry and evade land reform. Using a political ecology lens, this study explored these controversies through a case study of game farming in the arid Northern Cape, which foregrounds the views of both white commercial and black small-scale farmers. It concluded that while game farming lies beyond what most under-resourced small-scale farmers can envisage, it could contribute to more sustainable local economies if appropriately regulated as part of a larger suite of land, conservation and agrarian reform commitments.

Supervisor: Prof CJ Walker

MARITIM, Eric Cheruiyot (English Studies)

Focalization schemas, transnational formations and social remittance in the works of Chimamanda Ngozi Adichie

This study examined migrant transnationalism in the novels and short stories of Chimamanda Ngozi Adichie. It examined her pre-occupation with character locations, social relationships and processes that problematise the boundedness of national spaces and processes. Homi Bhabha's notion of liminality and Peggy Levitt's social remittance theory were used to account for migrant experiences, together with the work of narratologists such as Mieke Bal and Gérard Genette on focalisation. Adichie's oeuvre illustrates that for transnational characters, socially remitted content such as values related to race, gender and socio-cultural factors takes root within structures embodied from home.

Supervisor: Dr NJ Bangeni

MUINJANGUE, Esther Utjua (Social Work)

Essential management tasks executed by social workers in the Directorate of Developmental Social Welfare Services in Namibia: An ecological systems perspective

No body of knowledge exists on specific management tasks of social workers. This ground-breaking study explored and described some essential management tasks executed by social workers on the frontline, middle and top levels of management in the Ministry of Health and Social Services in Namibia. The findings suggest that an ecological systems perspective on management in social work may have a significant positive impact on the service delivery of welfare organisations. Innovative and tangible recommendations are offered regarding management tasks in terms of workload, information, risk, transformation, supervision, programmes, monitoring and evaluation. These recommendations may be extrapolated from the Namibian context to other countries in the world.

Supervisor: Prof LK Engelbrecht

NUWAMANYA, Katabyama Alfred (Social Anthropology)

Seeing and living like a cross-border pastoralist: Local struggles over state resources and services on the Uganda–DRC border

This ethnographic study focused on everyday social and livelihood practices of cross-border pastoralists on the Uganda–DRC border. It examined how pastoralists access state resources and services, and how their cross-border practices rub up against state-driven policies and programmes that privilege sedentary populations. The study reveals how these pastoralists navigate the threats posed by border police, soldiers, militias and stock thieves, and how they have had to develop social networks and political alliances in order to survive the increasingly precarious conditions of long-term drought, everyday violence and the 'hardening' of what was once a relatively porous border.

Supervisor: Prof SL Robins

OBENGO, Tom Joel (Applied Ethics)

A utilitarian assessment of the relevance of genetic therapies for HIV/AIDS in Africa, with special reference to the situation in Kenya

As African countries continue to bear the largest global burden of HIV/AIDS, the survival rates and the quality of life for the patients have significantly improved from the interventions through the current treatment options. However, missing the medications for some days unleashes a rapid viral replication, with adverse effects that interfere with patients' usual activities or lifestyles, leading to poor adherence for some, thereby posing risks of treatment failure. A utilitarian assessment of the situation justifies the development and use of somatic and germline genetic therapies for the scourge, with maximum benefit sharing for the people and minimum negative consequences.

Supervisor: Prof AA van Niekerk

OBURU, Hildah Bochere (Psychology)

Social representations of the burning of boys' secondary schools in Kenya in 2016

School arson is remarkably common in Kenya. Using social representations theory, this study explored understandings of the phenomenon in government reports and print and social media, and investigated the views of students, parents and teachers. The study found multiple understandings of school arson, many linked to an overarching underlying concern: the perceived loss of African culture due to Western influences and international conventions, and a quest for a constructed authentic Kenyan identity in the postcolonial context. The findings have implications for the future of education in Kenya and for how Kenyan identity is understood.

Supervisor: Prof LP Swartz

Co-supervisor: Dr BJ Coetzee

SARFO, Elizabeth Anokyewaa (Psychology)

Exploration of child marriages in Ghana: Experiences of young female spouses, parents, elders and professionals

This multi-sample study explored perceived factors contributing to the practice of early marriage in Ghana and its related implications for the psychological well-being of adolescent married girls. Qualitative interview data were collected from key stakeholders (married girls, parents, community elders and staff of organisations) to garner their views and experiences. The findings revealed that early marriage has overwhelmingly negative implications for the psychological health of the married girls and indicated a strong influence of religious and economic factors and cultural constructions of marriage, adolescence, gender and sexuality on the practice of early marriage. Detailed intervention recommendations are made in the study.

Supervisor: Prof AV Naidoo

Co-supervisor: Dr J Salifu Yendork (external)

SMIT, Anri (Psychology)

Breast cancer stories: Exploring the multimodal narratives of twelve South African women with recurrent disease

Breast cancer recurrence is poorly understood. Using various narrative approaches, this study explored women's subjective experiences of living with breast cancer recurrence and the meanings they attached to their experiences. Women's narratives were gathered using interviews, diaries as well as body maps. The findings highlight the complexity of illness experience and the different ways in which women make sense of a second episode of cancer. Indeed, women's experiences of recurrence were complex and fluctuated between a determination to survive and a sense of hopelessness about the future. The findings have implications for understanding illness identity in cancer recurrence.

Supervisor: Dr BJ Coetzee

Co-supervisors: Dr R Roomaney, Prof LP Swartz

STEIN, David Emil Sulomm (Ancient Languages)

Relational meanings of the noun אִישׁ (ʾiš) in Biblical Hebrew

This interdisciplinary study revises the standard view of the most common human-denoting noun in each of three languages: Ancient Hebrew (אִישׁ and its feminine form), English (*man/woman*) and French (*homme/femme*). The study hypothesised that such a noun succinctly labels its referent as 'a participant in a situation', which makes it highly efficient in communication. The study confirms that the Hebrew noun in question was indeed the preferred term for defining a situation or indicating participation that truly matters. In addition, the hypothesis explains several otherwise-puzzling usage patterns in the Hebrew Bible, while resolving longstanding interpretive cruxes that feature this noun.

Supervisor: Prof CHJ van der Merwe

TALABI, Grace Oluwabunmi (Music)

A study of the music and social meaning of selected choral works from Dayò Oyèdún's cantatas

This study explored the interface between the socio-political realities in Nigeria and African art music discourses by performing the first ever substantive reading of selected choral numbers from Nigerian composer Dayò Oyèdún's cantata compositions, which are secular choral works. Four pieces from these cantatas were selected for this study: 'Qm'qniṛeṣi', 'Tòkunbò' and 'American Visa' from the *Hospital Cantata* and 'Nepa' from the *University Cantata*. It is proposed that the performance of art music repertoires that reflect on Nigeria's socio-political issues in performance spaces such as concert halls might lead to productive engagements, negotiations, mediations and interventions in social, economic and political spheres.

Supervisor: Prof SjuZ Muller

Co-supervisor: Dr P Fourie

TERBLANCHE, Renelle (Sociology)

Ongediertes: A critical qualitative study of farmer–black-backed jackal conflict and its management around the Square Kilometre Array core site in the Northern Cape, South Africa

Drawing on the literature on human–wildlife conflict, political ecology and social capital, this study explored the material and symbolic dimensions of farmer–jackal conflict around the Square Kilometre Array radio telescope in the Karoo and the significance of the characterisation of jackals as *ongediertes* ('non-animals') in popular culture. Farmer–jackal conflict cannot be delinked from human–human conflict, with both jackals and the Square Kilometre Array contravening commercial farmers' understanding of the 'natural' order in the Karoo, in which livestock farming is dominant. In this context, effective jackal management requires building interpersonal and institutional trust among local actors and utilising the resources of both scientific and local knowledge.

Supervisor: Prof CJ Walker

VAN WYK, Klara (Drama and Theatre Studies)

Identifying and exploring key principles of the clown in theatre – a practice-led approach

In this study, artistic research methods were employed to identify principles of clowning as practised in contemporary training workshops. Applications of these methods within a South African theatre context are offered. Autoethnographic accounts and fictional narratives offer insights into clowning from the personal perspective of the researcher's multiple roles as performer, student, educator and audience member. This was supplemented by an interpretive analysis of existing literature on clowns and clown theatre. By critically addressing the multifaceted approaches to engendering laughter within clown training and performance, this practice-led study highlights the benefits and challenges of translating clowning into contemporary theatre practice.

Supervisor: Dr S Prigge-Pienaar

Co-supervisor: Dr J Davison

WELMAN-HAWKES, Thandi (Ancient Cultures)

'Orphan artefacts': Investigating classical objects in the Iziko collection, Cape Town

This study addressed the issue of what should be done with 'orphan artefacts', a term coined by Thandi Welman-Hawkes to describe objects in museums that belong to collections, but are 'neglected' through current museological practices and ideologies in South African museums. The case study of classical (Greek and Roman) artefacts in storage at Iziko (Cape Town) since 1998 used the theories of negative heritage and object- and nation-oriented policies, as well as a topology of value developed for this study, to investigate whether these intrinsically European artefacts have value in a post-colonial, post-apartheid South Africa.

Supervisor: Dr S Masters

WILLIAMS, Anzette (Vertaling)

'n Ondersoek na die seleksie en funksie van internasionale kinderboeke wat in Afrikaans vertaal is vir die tydperk 1990–2018

Hierdie studie het 'n ondersoek behels na die magstrukture wat 'n rol speel in die seleksie van kinderboeke van internasionale herkoms vir vertaling in Afrikaans in die tydperk 1990–2018 en die funksie wat hierdie vertalings in die Afrikaanse kultuur verrig. Die ondersoek was gegrond op sosiale sisteemteorie en het geskied deur die analise van 'n inventaris van internasionale kinderboeke wat in Afrikaans vertaal is vir hierdie tydperk en deur die analise van onderhoude met die prominentste uitgewers. Afrikaanse kinderboekuitgewers selekteer hoofsaaklik internasionale kinderboeke vir vertaling uit dominante Europese tale om sodoende Afrikaans se status te verhoog. Die vertaalde kinderboeke se hoof funksie is die vernuwing en uitbreiding van die Afrikaanse kinderboekemark.

Promotor: Prof AE Feinauer

XABA, Nkhamba Jantjie (Sociology)

A comparative study of Afrikaner Economic Empowerment and Black Economic Empowerment: A case study of a former South African parastatal in Vanderbijlpark

Since 1994, there has been widespread debate as to why Black Economic Empowerment (BEE) has not delivered the same economic benefits post 1994 as Afrikaner Economic Empowerment (AEE). Using a structural-functionalist approach to determine how the macro political-legal, economic and social systems worked together to bring about the empowerment and a social constructionist approach at the micro level, the study found that both systems developed a welfare state and state-owned enterprises as vehicles for empowerment. However, AEE was more successful than BEE because there was an alignment between the state, business and civil society, which supported AEE and development of social capital through language, religion and nationalism.

Supervisor: Prof LPT Heinecken

YAYAH, Abiba (Political Science)

The sustainability of the shea industry among rural women in Northern Ghana

This study investigated the sustainability of the shea industry after the implementation of the shea export policy in the late 1980s and early 1990s in a region characterised by gender biases and patriarchal systems. By recounting the narratives of shea butter producers, calculating the cost structure of actors in the shea value chain and developing causal loop diagrams, this study shows the power imbalances in the shea value chain, income inequality and economic manipulation affecting rural women shea producers and the sustainability of the industry. It also identified the lack of cohesiveness between policies and interventions at the national level and regional level.

Supervisor: Prof A Gouws

Co-supervisor: Dr L de Lange

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Lettere en Wysbegeerte Master of Arts

Bam, Otto Erich (English Studies) (*cum laude*)
Beck, Cassidi (Political Science)
Berry, George Thomas (Psychology) (*cum laude*)
Beukes, Almaz Claire-Maude (Social Anthropology) (*cum laude*)
Bock, Ivan (Philosophy) (*cum laude*)
Bolton, Kylie Monique (Social Anthropology) (*cum laude*)
Bothma, Gerhard Jacobus (Psychology)
Burger, Lize (Afrikaans and Dutch)
Chance, Samantha Jane (Political Science) (*cum laude*)
Combrink, Lize-Maré (Sociology)
Dick, Taryn Lee (General Linguistics) (*cum laude*)
Du Plessis, Annette (Afrikaans and Dutch)
Du Plessis, Daniel Willem (Philosophy) (*cum laude*)
Du Preez, Janke (Ancient Cultures)
Du Toit, Jacques Avril (Technology in Language Learning)
Engelbrecht, Christa Suretha (Social Anthropology) (*cum laude*)
Esterhuyzen, Mia (Psychology)
Farah, Jessica Lynn (Journalism)
Folscher, Marine (Political Science) (*cum laude*)
Gabriels, Carmen Allison Pamela (Afrikaans and Dutch)
Genis, Petronella Facqueline (Afrikaans and Dutch)
Gericke, Franco (Psychology) (*cum laude*)
Gramberg-Danielsen, Lillian Ise Katharina (Geography and Environmental Studies A)
Gregan, Eugenie (Journalism)
Hatto, Anelisiwe Omphithetse (Political Science)
Jacobs, Ielhaam (Clinical Psychology)
Jeftha, Caryn (English Studies) (*cum laude*)
Kara, Kajil Ashokbhai (Ancient Cultures)
Klopper, Helene Fernandine (History)
Kruger, Wilanda (History)
Lubbe, Cailen (Psychology) (*cum laude*)
Luizinho, Robyn Mandy (Second-language Studies) (*cum laude*)
Maarman, Johann (Journalism)
Marais, Anika Milly (Journalism)
Marais, Jamie Emily (Drama and Theatre Studies) (*cum laude*)
Marcus, Thaakirah (Geography and Environmental Studies A)
Mashazi, Simangele Anne-Marie (General Linguistics) (*cum laude*)
Matooane, Matsie Innocentia (Clinical Psychology)
Mbebe, Sylvie (Psychology)
Mc Ewan, Kayla Ann (Political Science)
McLoughlin, Jayde Caitlyn (General Linguistics) (*cum laude*)
McRae, Cailin (History) (*cum laude*)
Messarra, John Andrew (Ancient Languages) (*cum laude*)
Minnaar, Sulette (General Linguistics) (*cum laude*)
Mohlomi, Marie Ann (Intercultural Communication)
Monakali, Esethu (Sociology) (*cum laude*)
Naik, Nikhil Rajendra (Geography and Environmental Studies A) (*cum laude*)
Neff, Shante Tuscany (Sociology) (*cum laude*)
Nel, Annemieke Bianca (History)
Nzungu, Imkhitha Sandile (Ancient Cultures) (*cum laude*)
Palmer, Amy (General Linguistics) (*cum laude*)
Parker, Talya (Political Science)
Parshotam, Minali Dinesh (General Linguistics) (*cum laude*)
Pfeffer, Lisa (German) (*cum laude*)
Pretorius, Charné (General Linguistics) (*cum laude*)
Pretorius, Karla (Psychology)
Rademan, Anna Elizabeth (Journalism)
Roux, Jacquiline (Sociology)

Schmidt, Adriana (Political Science)
Shewell, Emma Anne (Political Science)
Sibande, Zamafiso Nombulelo (Psychology)
Tennant, Jade Lancaster (Sociology) (*cum laude*)
Terblanche, Marthie Isabelle (Afrikaans and Dutch)
Troup, Caitlin Mary (International Studies) (*cum laude*)
Tshikila, Simthandile Sibabalwenathi Mhlahli (Psychology) (*cum laude*)
Van der Spuy, Michelle (Journalism)
Van Niekerk, Andries (General Linguistics)
Van Wyk, Annemarie (Journalism)
Vermeulen, Marguerite (Journalism)
Waggie, Ashrudeen (History) (*cum laude*)
Wardle, Amy Leigh (Political Science)
Wiggill, Caitlin (Drama and Theatre Studies) (*cum laude*)

Magister in die Wysbegeerte Master of Philosophy

Amponsah, Joshua (Monitoring and Evaluation Methods)
Bhebhe, Hlengani (Monitoring and Evaluation Methods)
Chabani, Nkateko (Urban and Regional Science)
Chames, Jeremy David (Information and Knowledge Management)
Davids, Shahieda (Science and Technology Studies)
Dube, Charles (Monitoring and Evaluation Methods)
Fernandez, Raimo David (Urban and Regional Science)
Gavhi-Molefe, Mpfareleni Rejoyce (Science and Technology Studies)
Govender, Evashnie (Urban and Regional Science)
Govinden, Krisseelan (Urban and Regional Science)
Gxumisa, Athi Abongile (Urban and Regional Science)
Hauptfleisch, Chantel (Urban and Regional Science)
Keal, Hannah Margaret (Science and Technology Studies) (*cum laude*)
Khumalo, Ntsweleng Rodney (Urban and Regional Science)
Kidha, Dan Kidha (Applied Ethics) (*cum laude*)
Kleingbiel, Lizel (Science and Technology Studies) (*cum laude*)
Lamprecht, Corné (Science and Technology Studies) (*cum laude*)
Mandioma, Rumbidzai Gillian (Monitoring and Evaluation Methods)
Maranda, Shonisani Bridget (Urban and Regional Science)
Matsimbi, Fikile Elly (Urban and Regional Science)
Mukali, Isabel Malandu (Monitoring and Evaluation Methods)
Munyaka, Moreblessing (Monitoring and Evaluation Methods) (*cum laude*)
Nel, Marlese (Science and Technology Studies)
Nene, Siyabonga Erick (Information and Knowledge Management)
Ntimane, Lazarus Mandla (Information and Knowledge Management)
Nyapokoto, Henry (Monitoring and Evaluation Methods)
Potgieter, Helet Elizabeth (Applied Ethics) (*cum laude*)
Ramohlale, Refilwe Mary-Jane (Science and Technology Studies)
Schoeman, Cynthia Therese (Applied Ethics) (*cum laude*)
Seme, Thabisile Thembaletu (Monitoring and Evaluation Methods)
Slaven, Frances Brigid (Monitoring and Evaluation Methods)
Stadler, Rohan (Monitoring and Evaluation Methods) (*cum laude*)
Thetard, Rudolph Court Heinrich (Applied Ethics) (*cum laude*)
Tise, Ellen Remona (Science and Technology Studies)
Tshuma, Brian (Monitoring and Evaluation Methods)
Vanqa, Nosivuyile (Transdisciplinary Health and Development Studies)

Magister in Stads- en Streeksbeplanning
Master of Urban and Regional Planning

Balie, Quinton Joseph (Urban and Regional Planning)
Pienaar, Reinhardt (Urban and Regional Planning)

Magister in Maatskaplike Werk
Master of Social Work

De Koker, Devon Clive (Social Work)
Nyembezi, Sinazo (Social Work)
Shozi, Prudence Nomonde (Social Work)
Swart, Ashwill Denzill (Social Work)
Wynne, Thea Theresia (Social Work) (*cum laude*)

Magister in die Musiek
Master of Music

Coetzee, Lourens Erasmus
Frank, Joshua Benjamin (*cum laude*)
Sutton, Marcelle Myra (*cum laude*)

Magister in die Lettere en Wysbegeerte in Visuele Kunste
Master of Arts in Visual Arts

Ellmann, Maria Magdalena
Ingham, Chelsea Robin
Kirsten, Marguerite
Motake, Siphesihle Nonkanyiso (*cum laude*)
Odendaal, Louis
Shikongo, Helena Naambo
Titus, Carmen Maria
Van Tiddens, Clara Babette

Honneurs-Baccalaureus in die Lettere en Wysbegeerte
Bachelor of Arts Honours

Andrews, Jason (French)
Arendse, Claire Melissa (Psychology) (*cum laude*)
Arries, Basheer (Sociology)
Bean, Thandeka (Sociology)
Beukes, Zariah (Translation)
Binedell, Engelbert Junior (Chinese)
Bolognesi, Michelle Emma Gayle (Philosophy) (*cum laude*)
Botha, Getruida Petronella (Ancient Cultures) (*cum laude*)
Burns, Megan (Philosophy)
Caba, Nompendulo (Chinese)
Caldeira, Teniel (Psychology)
Coetsee, Johannes Jacobus (Philosophy) (*cum laude*)
Croukamp, Bradley Robert (Visual Studies)
Da Silva, Jean-Luke (Ancient Languages)
Damons, Marecia (Journalism)
Daniels, Chelsea Maree (International Studies)
Dart, Sarah Jean (Sociology)
Davids, Aaliyah (Journalism)
Deister, Paul (Philosophy) (*cum laude*)
Del Monte, Catherine Claire (Journalism)
Delpont, Dennis (Journalism)
Els, Andrea (Translation) (*cum laude*)
Erasmus, Tristesse (Philosophy)
Gardiner, Jessica (Psychology)
Geldenhuis, Demi (Psychology) (*cum laude*)
Gilliland, Wianda (Journalism)
Gobodo, Bapiwe (Sociology)
Götz, Gizellede Marguerite (Visual Studies)
Govender, Jenisha (Psychology)
Greenhalgh, Josie (Psychology) (*cum laude*)
Greyling, Jana (Journalism)

Groeneveld, Elise (Translation) (*cum laude*)
Heydenrych, Ingrid (Afrikaans and Dutch)
Hopkins, Lucinda Anne (General Linguistics)
Human, Liezl (Journalism)
Human, Zoë Demi (Journalism)
Jacobs, Stacey-Lee (Psychology)
Jeftha, Dominique (Journalism)
Johannes, Embeth Lisa (Sociology) (*cum laude*)
Johnson, Damian (Sociology) (*cum laude*)
Jooste, Leroy (Afrikaans and Dutch)
Josephs, Jessica (Journalism)
King, Tristan (Philosophy) (*cum laude*)
Kluckow, Ingrid (Journalism)
Knappe, Tinyiko Celestine (International Studies)
Knox, Bronwyn-Leigh (Visual Studies) (*cum laude*)
Kotze, Marguerite Helene (Philosophy) (*cum laude*)
Kruger, Mieke (Philosophy) (*cum laude*)
Lamprecht, Gert Johannes (Philosophy) (*cum laude*)
Lefika, Mabitsa Jimmy (Psychology)
Louw, Emile (Philosophy) (*cum laude*)
Madondile, Sikulule (International Studies)
Majola, Emma Mmaxaba (History)
Mamoepa, Bohlale Mashaa (International Studies)
Marais, Thomas Arnoldus (Visual Studies) (*cum laude*)
Maseko, Sithembiso (History)
Matiwane, Nosipiwo (Social Anthropology) (*cum laude*)
Matlakala, Mahlako (Psychology)
Mbuli, Siposetu (Journalism)
Meyer, Simónn (Sociology) (*cum laude*)
Moodley, Nishai (Social Anthropology)
Mooneys, Roxanne (Journalism)
Mühlberg, Byron (Journalism)
Müller, Andrea (Afrikaans and Dutch) (*cum laude*)
Muller, Francé Jodie (Afrikaans and Dutch)
Naude, Anel (Philosophy)
Naude, Rion Hendrik (Visual Studies)
Netley, Leska Kari (Translation) (*cum laude*)
Njamela, Sive (African Languages)
Ntombela, Nomzamo Portia (Social Anthropology)
Nyamudeza, Tariro Salim (Sociology)
Oelofse, Rogan Adrian (Social Anthropology)
Oram, Caryn Leigh (English Studies) (*cum laude*)
Parrott, Aydn (Journalism)
Pentz, Nadja (History)
Petersen, Cher (Journalism)
Pretorius, Paige Stephanie (Geography and Environmental Studies)
Ramarumo, Aluwani Alice (History)
Roux, Jacqueline (Psychology) (*cum laude*)
Roux, Josephine Anne (Philosophy) (*cum laude*)
Sass, Shane Wilfred (Social Anthropology)
Saule, Ziphelele (Psychology)
Shirley, Renee (General Linguistics)
Singh, Tashin (Journalism)
Slabbert, Philip (Psychology) (*cum laude*)
Smit, Magdaleen (Drama and Theatre Studies) (*cum laude*)
Smith, Matthew James (Psychology)
Snijman, Yda Cornelia (Journalism)
Snyman, Annerine (Journalism)
Sutherland, James Andrew (Visual Studies)
Swart, Gérard Wilhelm (Philosophy) (*cum laude*)
Swart, Lourens (Philosophy)
Van den Berg, Kathryn Ashleigh (Visual Studies)
Van den Berg, Sophia Annika (Translation)
Van der Berg, Kara (Journalism)
Van der Bijl, Klara-Lia (Translation) (*cum laude*)
Van der Merwe, Anke Irene (Journalism)
Van der Merwe, Kanja Susan (Translation) (*cum laude*)
Van der Poll, Ryan (Psychology)
Van der Westhuizen, Nicola (Sociology)

Van Dyk, Joha (English Studies) (*cum laude*)
Van Schalkwyk, Julia Catharina (Afrikaans and Dutch)
Van Schalkwyk, Leoni (Ancient Languages)
Van Wyk, Lucian (Journalism)
Van Wyk, Zoe Maria (Chinese)
Voigt, Elri (Journalism)
Wallace, Megan Lee (Visual Studies) (*cum laude*)
Williams, Courtney (Journalism)
Williams, Dylan (Chinese)
Wright, Michael Duncan (Journalism)

Honneurs-Baccalaureus in die Musiek
Bachelor of Music Honours

Brand, Christian Johannes
Brink, Lorissa Barbara (*cum laude*)
Coetsee, Hendrik Jacobus (*cum laude*)
Levenderis, Frances Nikita Donata
Lottino, Elrine-Louise (*cum laude*)
Reyneke, Amalia
Van Wyk, Nicole Michelle

Nagraadse Diploma in Kennis- en Inligtingstelselbestuur
Postgraduate Diploma in Knowledge and Information Systems
Management

Buthelezi, Cynthia Makhosazane
Chimhanda, Molly Tsitsi
Feketshane, Siviwe
Grewan, Rodwyn
Jeftha, Jill
Lugisani, Nkhanedzeni Felicia
Mketo, Lawrence Siphamandla
Mmotong, Rantshweng Abel
Mudzongo, Melody Dallana
Mukarati, Tongai
Rutsito, Wirimai
Skundla, Lamla

Nagraadse Diploma in Musiektegnologie
Postgraduate Diploma in Music Technology

De, Sourajit

Nagraadse Diploma in Monitering en Ewaluering
Postgraduate Diploma in Monitoring and Evaluation

Beck-Reinhardt, Claudia
Biyela, Mduduzi Wiseman
Carr, Keagan David
Dewa, Carron
Dube, Tanyaradzwa Nicolette
Gatei, Judy Wambui
Kenalemang, Kelebogile
Khesa, Maoala Shadrack
Kopanye, Lephophosi Jacob
Kutta, Thandekile
Maepe, Mantsebeng
Mahase, Malebonyane Elliot
Mahlanza, Zanele
Majoro, Mpho
Makwarimba, Jacqueline
Manthosi, Frans Lesetja
Manzira, Patience
Mapondera, Prichard Tawanda
Mavhenge, Mellisa Mabel
Mbewe, Marianne
Mokitimi, Ntsopa Seforah
Mosoane, Mmasempaleng Permly
Moyo, Bhekimpilo
Mpetsheni, Saphokazi
Mthembu, Daisy Sindisiwe
Mutimbiri, Jacqueline
Ndebele, Andrea Hanganani
Ndleleni, Nomawetu Lorraine
Nemuramba, Enocent
Nyakane Nkoko, Morongoe Flory
Nyamudoka, Charles Munyaradzi
Raleting, Thato Joyce
Ramdhani, Reshika (*cum laude*)
Rohde, Zoe (*cum laude*)
Sibulawa, Siyabonga
Sithole, Zanele

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

Baccalaureus in die Lettere en Wysbegeerte
Bachelor of Arts

Absolom, Virgil
Adams, Rivka Barbara
America, Tara
Aphane, Boipelo
Apollis, Devan Tezwille
Apollus, Robyn Eleanor
Arkipov, Egor
Baadjies, Mark
Bakker, Celine
Bamber, Christian
Bambiso, Bandile
Bell, Harry Laurence
Bergs, Christen-Jenna Ayre
Beukes, David Benjamin
Beyers, Lee-Andre Macdean
Boomgaard, Moegamad Deen
Booyesen, Sioned
Booyesen, Thea
Boraine, Ashlee Sue
Botes, Christan Nancy (*cum laude*)
Burton, Olivia
Butler, Jeremy Edward
Buys, Christeline
Carelse, Chloe Sinead
Charles, Robyn
Combrink, Ilyas
Conley, Micah William
Cooper, Josephine Philippa
Courtney, Kyall
Crotz, Aiden
Croucamp, Lazelle Sara
Davids, Lenelda Violet
De Beer, Fritz Du Plessis
De Bruyn, Haviland Marcellus
De Grijs, Chanté
De Kock, Marissa
De Vries, Jarryd Carl
De Wet, Kate Nicola Corte
Denyssen, Kristin Caren
Dixon, Jayden Sharon
Du Toit, Brett Stephen
Du Toit, Wahnice Devoné
Duna, Siyabulela Thandisizwe
Erasmus, Geo Marais
Erasmus, Kirsten Helen
Fanton, Justin Andrew
Ferreira, Erin Andreas (*cum laude*)
Ferreira, Joshua Riaan
Firth, Holly Catherine
Fourie, Imke
Franken, Christian Burger
Garland, Judy
George, Dalene
Giddy, Alizwa Barbara
Golach, Elrie
Gould, Kyra
Gradwell, Danielle Leanne
Grieve, Caitlin May (*cum laude*)
Grobler, Kirsten
Grobler, Vanessa
Hanger, Rory Thomas
Heesom-Green, Aran Grace
Heynes, Michaela Lee
Hlwatika, Vuyokazi Zintathu Margaret
Horne, Ella Louise
Horsley, Cherise Mary-Ann
Israelsson, Cayley Jenna
Jacobs, Aimee Carlyn
Jacobs, Jade
Jacobs, Jamie Lee
Janse van Vuuren, Anina
Jooste, Milanje
Joubert, Christopher
Kajee, Yusuf Ebrahim
Kelly, Robin
Kerspuy, Bronwyn
Kieser, Lulu Heleen
Kleynhans, Nadia
Klue, Chevonne
Krige, Kristhoff
Kropf, Sarah
Kyony, Lena Kalume-Kitwa
Law, Jessica Emma
Liebenberg, Hetlie
Links, Tamia Haroldene Sarahjoan
Lombard, Jevanes
Lunde, Kerenza
Makanda, Mfundo Xolo
Maker, Yusra
Marcus, Micheala Shiniel
Marshall, Kayleigh Rae
Martin, Libur
Mason-Gordon, Samantha
Mathunjwa, Nozizwe Temakholo
Mc Dermott, Sinead
Mc Cready, Yasmin Grace
Mc Lulich, Tegan Isabelle
Meyer, Carla Bridgette
Meyer, Laura
Mfeka, Nolwazi
Mkondweni, Siphiso
Moon, Georgina Deborah
Mortimer, Lauren Kate
Motimele, Mosebo Khumo
Mouton, Lizelle Paula
Mouton, Robyn Terri
Mtshali, Sinazo Afikile
Muller, Willem Johannes
Mvalo, Sandiso
Naude, Stephanus David
Nel, Anika
Nel, Jordan David
Nolte, Kayleigh
Noyce, Justine
Nwagbara, Ricky Ezenwa
October, Shireen
Oliver, Laurie Rae
Oosthuizen, Alzet

Oosthuizen, Riandri
Patmore, Robyn Danielle
Paynter, Amber Joan Sara (*cum laude*)
Pepworth, Sarah Anne
Pons, Ruth Helen
Potgieter, Ruark
Ratlhaga, Josephine Mosedi
Rigby, Paige Louise
Robertson, Claire Therese
Rodgers, Aneesha
Roos, Curtly
Roux, Jacqueline
Roux, Marté Suzanne
Schirmacher, Megan Jade
Schlewing, Jannick (*cum laude*)
Schnetler, Anrich
Schoeman, Kaylin Monique
Scholtz, Marlenke
Seekoei, Luther-King
Serage, Ornila
Serfontein, Mart-Marié
Shwana, Linda
Sibanda, Sijabuliso
Smit, Simoné
Smith, James Warren
Smith, Shannon Lee
Snyman, Alexandra Nicole Anne
Spies, Jeandre
Stokes, Jonathan Christian
Strachan, Stephanie Gertrude
Swart, Jénel
Swarts, Kelley Lynette
Swartz, Samoné
Terry, Ruan Micheal
Toms, Carmen Chloe
Treurnich, Suné
Uys, Sebastian Frank
Van der Merwe, Karen
Van der Merwe, Mieke
Van der Meulen, Kjirsten Truida
Van der Walt, Minelle
Van der Watt, Danielle Elana
Van der Westhuizen, Annimie
Van der Westhuizen, Elri
Van Eyssen, Tasha Sandrè
Van Wyk, Carli Andrea
Van Zyl, Alicia Kayla
Verwey, Marizaan
Viljoen, Izelle
Visagé, Francesca
Visagie, Kayla
Vivier, Chanté
Vlaandorp, Shaneen Nicole
Von Thelemann, Dirk Carl Horst
Wessels, Lara
Wiesner, Gareth Neil
Willemse, Michaela Veronique
Wüst, Suzanne (*cum laude*)
Zatu, Mbulelo

**Baccalaureus in Maatskaplike Werk
Bachelor of Social Work**

April, Denzil Garth
Fortuin, Lauren-Leigh Miché
Goliath, Amy
Herbert, Madele Helen Lindsay
Hoorn, Lucy Loraine
Jacobs, Chandre
Kgoedi, Reabetswe
Mlungwana, Cynthia Nontuthuzelo
Ntshanga, Nomaphelo Anita
Oosthuizen, Jenevia Shannon
Shole, Tshepo
Thuketana, Vulani Nwamencisi

**Baccalaureus in die Musiek
Bachelor of Music**

Windvogel, Chanry Charvonne

**Baccalaureus in die Lettere en Wysbegeerte in Visuele Kunste
Bachelor of Arts in Visual Arts**

Pietersen, Hayley Stephanie (Fine Arts)



Fakulteit
Natuurwetenskappe

Faculty
Science

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte
Doctor of Philosophy

ADAMS, Rozanne (Physiological Sciences)

Influence of maternal inflammation on immune modulation

Generational transfer of maladaptations in offspring persists for multiple generations in conditions of chronic maternal inflammation. Studying three generations of mice, chronic maternal inflammation during the gestational period was shown to result in sex-dependent maladaptations of the hypothalamic-pituitary-adrenal axis and NLRP3 inflammasome. This negatively modulated immune function for at least two subsequent generations. The findings suggested that maternal gestational chronic inflammation results in the transfer of a pro-inflammatory phenotype that seems to affect male offspring to a greater extent. The transfer of cumulative maladaptation from both parents resulted in blunted immune capacity, suggesting immune senescence.

Supervisor: Prof C Smith

ALUJEVIC, Karla (Zoology)

*Thermal physiology, behaviour and fitness in the lizard *Agama atra*:
Exploring inter-individual variation in the context of environmental change*

Natural selection acts on a suite of traits rather than single traits of individuals, shaping integrated phenotypes that are adapted to the environment. Traits can be genetically and phenotypically correlated and, depending on the strength and direction of these associations, they can evolve in unison or constrain evolutionary change. The inter-individual variation and thermal dependence of physiology, behaviour and territory quality of the lizard *Agama atra* were measured to explore these relationships. Particular traits were integrated within defined syndromes, indicating that individuals vary in suites of correlated traits. This study advances our understanding of responses of integrated phenotypes to thermal variation and environmental change more generally.

Supervisor: Dr Clusella-Trullas

Co-supervisors: Prof M Logan, Dr JW Streicher (external)

BAKER, Liam (Mathematics)

Drinfeld modular forms of higher rank from a lattice-oriented point of view

A new approach to study Drinfeld modular forms is given in this study by starting with a set of lattices with level structure instead of a moduli space of Drinfeld modules. This set of lattices was endowed with the structure of a rigid analytic space and the resulting space was compared to the moduli space of Drinfeld modules with level structure. Modular forms were defined in this setting and it was shown that the graded ring of cusp forms agreed with the graded ring of cusp forms that arises when starting with the moduli space of Drinfeld modules

Supervisor: Dr D Basson

Co-supervisor: Prof F Breuer (external)

BAM, Lunga (Geology)

Developing protocols for XCT scanning of dense mineral ore samples with applications to geology and minerals processing

Novel methods for X-ray computed tomography systems were developed to provide rapid 3-D drill core mineralogical and textural information relevant to mineral processing within the South African mining context. The quantified information was achieved by using the developed linear attenuation coefficient data bank, standardised methods to determine optimal sample sizes and a simplified dual-energy method to optimise mineralogical discrimination for high-density ore types. The developed methods have the potential to address the need for real-time textural and mineralogical information in order to optimise the decision-making process in the design and operation of mineral processing flowsheets of different ore types.

Supervisor: Assoc. Prof JA Miller

Co-supervisor: Assoc. Prof M Becker (external)

BARNARD, Elaine (Polymer Science)

Synthesis, structure and crystallization behaviour of amphiphilic hetero-arm molecular brushes with crystallizable poly(ethylene glycol) and N-Alkyl side chains

Molecular brushes are densely grafted polymers with properties that are influenced by the dense grafting itself as well as the nature of the grafts. Hydrophilic and hydrophobic grafts were placed in an almost perfect alternating fashion along the backbone of the molecular brush. The incompatibility of the two types of grafts led to phase separation in solution as well as in the melt and the solid state. The crystallisable nature of both types of grafts led to unique phase behaviour, where the length of the grafts had a large influence on the crystallisation process.

Supervisor: Prof L Klumperman

Co-supervisor: Dr R Pfukwa

BARNARD, Ilse (Chemistry)

⁵⁹Co NMR as a tool for the study of structure, reactivity and supramolecular chemistry of Co(III) complexes of a series of N-alkyl-N-alkyl(aryl)-N'-acylthioureas

This study demonstrates that ⁵⁹Cobalt nuclear magnetic resonance (NMR) spectroscopy is an exceptional tool to study details of the fundamental coordination and supramolecular chemistry of the complexes of the rare and important element cobalt. The study sets a new benchmark for the application of ⁵⁹Co NMR spectroscopy. Cobalt plays a significant role in batteries for electric automobiles and is likely to play a potentially even more significant role as a catalyst to efficiently split water into hydrogen and oxygen in artificial leaves, which may solve the world's energy crisis in an imminent hydrogen economy.

Supervisor: Prof KR Koch

Co-supervisor: Dr WJ Gerber

BARNARD, Lise (Biochemistry)

An investigation into the biosynthesis, metabolism and activity of 11-oxygenated estrogens

Androgens are the obligatory precursors for estrogen biosynthesis, catalysed by cytochrome P450 aromatase. Using multiple *in vitro* and *ex vivo* aromatase assays, the overlooked 11-oxygenated androgens of adrenal origin were shown to be substrates for aromatase, yielding a novel class of 11-oxygenated estrogens. The 11-oxygenated estrogen 11 β -hydroxyestradiol induces estrogen-dependent gene expression and cell growth in breast cancer cell lines to a similar degree to the potent estrogen 17 β -estradiol. Moreover, aromatisation of the 11-oxygenated androgen 11-ketotestosterone within breast cancer cells yielded an estrogen response. These findings have important implications for our understanding of sex steroid metabolism and action.

Supervisor: Prof K Storbeck

Co-supervisor: Prof W Arlt (external)

BASHIR, Munirat (Physics)

Design, construction and characterization of low-level radioactivity gamma-ray spectrometer system using LaBr₃:Ce scintillator detectors

Two novel approaches to measuring the primordial radioactivity content in soils/ores were developed. The approaches made use of gamma ray spectrometry by means of inorganic scintillator-based detectors, comprising lanthanum-bromide and sodium-iodide crystals, respectively. The first approach used at least two lanthanum-bromide scintillator detectors, digital-signal processing and fast timing to measure the uranium- and thorium-series radionuclide content in soils/ores. Software gates on the time-of-flight of gamma rays were used to select gamma ray cascades associated with the decay of the associated radionuclides. The second approach made use of a single scintillator, preferably sodium iodide, and a custom-designed water shield to suppress background gamma rays.

Supervisor: Prof RT Newman

Co-supervisor: Dr P Jones (external)

BRUMMER, Johann (Physics)

Spectroscopy of ²²Mg relevant to explosive nucleosynthesis in classical novae and X-ray bursts

X-ray bursts are thermonuclear explosions on the surface of neutron stars. The pattern of the light of these explosions is dependent on a number of important astrophysical reactions, including ¹⁸Ne(a,p)²¹Na. Measurements of the inverse reaction have been performed but correction must be made to account for the branches that cannot be probed in these reactions. These missing branches were measured using the K600 magnetic spectrometer and the Coincidence Array for K600 Experiments. The strength of the missing branches was determined and used to correct the existing reaction rate data.

Supervisor: Dr P Adsley (external)

Co-supervisor: Prof P Papka

CLAASSENS, Isabella (Chemistry)

Structure–property relationships in stimulus-responsive cadmium- and zinc-based metal-organic frameworks

Materials science is concerned with developing new materials with useful properties. Stimulus-responsive materials are particularly interesting, as they sense and then react to some external condition. A new cadmium-containing metal-organic compound was devised as the scaffold for a photo-induced synthetic procedure that occurs exclusively in the solid state. Two stimuli were investigated and it was demonstrated that the reaction outcome can be finely controlled by the temperature or nature of the entrapped solvent. A flexible zinc-containing framework was investigated for its ability to expand under gas pressure and it was found that the gate-opening pressure could be controlled by fluorination of one of the framework components.

Supervisor: Prof DA Haynes

Co-supervisor: Prof LJ Barbour

COETZEE, André (Geology)

Geology and emplacement controls of dolerite sill complexes in the Karoo basin

Geophysical, surface and subsurface data from over 3 000 boreholes were integrated into 3-D models that illustrate the complex geometry and connectivity of dolerite sills dominating the Karoo landscape in South Africa. The results documented a continental-scale, interconnected magma plumbing system. Deep-seated magma feeders were predominantly controlled by pre-existing anisotropies in basement rocks. Sill emplacement occurred during mild regional shortening and was determined by rigidity contrasts, either in the heterogeneous Karoo Supergroup or through earlier emplaced sills. Systematic variations in size and geometry of regional sill-saucer complexes reflected the interplay between emplacement depths, proximity to feeders and wall-rock rigidities.

Supervisor: Prof AFM Kisters

DU PLESSIS, Marike (Chemistry)

Guest uptake in porous metallocyclic host compounds

The porous nature of three known metallocyclic systems was probed by carrying out single-crystal to single-crystal guest exchange experiments through direct immersion of single crystals in the liquid guest or through exposure to the vapours of volatile solids. Eleven new guest-included complexes were obtained, characterised and investigated to gain insight into the relationship between the structures and the properties of the materials. The results obtained with one of these systems extended the scope of possible applications for porous metallocycles by adding separation and purification to the already-known sorption and sensing applications. This has specific implications for the xylene industry.

Supervisor: Prof LJ Barbour

DU TOIT, Cornel (Physical and Mathematical Analysis)

Probabilistic graphical modelling of seismic data processing in mining

Accurate and fast monitoring and location of seismic activity in mines are matters of life and death. With about 35 000 seismic events received daily from mines worldwide, fast and reliable mathematical algorithms to characterise and quantify them are a necessity. A hidden Markov model and Probabilistic Graphical Model (PGM) were developed to determine arrival times of the seismic waves at different sensors and hence the location and time of the earthquake. The PGM, combining signals from many sensors, represents a worldwide first. The resulting algorithms are being used commercially, saving millions of rands and increasing the safety of mine workers.

Supervisor: Prof HC Eggers

DWAPANYIN, George Okyere (Physics)

Development of a multimodal nonlinear imaging system for biophotonic applications

Nonlinear microscopy has recently gained wide prominence in biological applications, as it provides an increased depth of penetration into tissue and better spatial resolution. This study focused on the design and construction of a unique, affordable and versatile nonlinear microscope for biophotonics applications. The constructed system integrated a novel spectral phase control technique, which is based on time-domain ptychography, and provided the first real-world application of this technique in microscopy. The new phase control technique provided superior control of the pulse, leading to better contrast and signal-to-noise ratios in nonlinear microscopy compared to conventional pulse control techniques.

Supervisor: Prof EG Rohwer

Co-supervisor: Dr PH Neethling

ESTERHUIZEN, Nanike (Zoology)

The botanical origin, physicochemical properties and antibacterial activity of selected West Coast honeys

Honey properties are influenced by the specific floral resources used by honeybees. The unique properties of honeys produced from indigenous West Coast vegetation were investigated. The first pollen library of the region was created and melissopalynology was used to identify the botanical origin of the honeys. The physicochemical properties of these honeys adhered to international standards, both fresh and after 12 months in storage. Overall, the honeys showed potentially therapeutically beneficial antibacterial activity. Annual rainfall was found to correlate with honey yield and drought-tolerant plant species were identified to optimise honey production. These results will increase the marketability of West Coast honeys.

Supervisor: Prof TC Wossler

INEZA, Claire (Chemistry)

Synthesis and use of novel ligands for the selective extraction of cobalt from other base metal ions

Cobalt is an important metal used in lithium ion batteries. Cobalt is rare and expensive, and in the last two years its price increased by 450%. Ligands (molecules) were designed and then synthesised for the selective separation of cobalt from other metal ions. Selectivity was obtained by adjusting several parameters, including type of ligand design and pH. Two different types of ligands were used – those that coordinate directly to cobalt and those that selectively coordinate to a cobalt complex. Best separations were of the order of 80% and 60% for the two ligand types, respectively.

Supervisor: Dr RC Luckay

JOKONYA, Simbarashe (Polymer Science)

PVP bioconjugates of membrane-disruptive peptides

Antimicrobial cyclic decapeptides are highly membrane-disruptive compounds. This property makes the peptides very interesting drug candidates, but also causes them to be very toxic. In order to diminish the toxicity, polymer bioconjugates were synthesised that can release the cyclic decapeptides under mildly acidic conditions, as encountered in many diseased tissues. Self-assembly of these polymer-peptide conjugates into micelles avoids exposure of healthy tissue, under neutral pH conditions, to the peptide and therefore reduces toxicity. Prostate cancer cells, glioblastoma cells and malaria-infected red blood cells were used as model systems to study the release and the therapeutic effect of the peptides.

Supervisor: Prof L Klumperman

Co-supervisor: Prof M Rautenbach

LEAVER, Jessica (Zoology)

Resource use in indigenous forest of the Eastern Cape, South Africa and its impacts on bird communities

Indigenous forest management in South Africa aims to balance the needs of resource users with the conservation of forest biodiversity. Unregulated harvesting of poles, timber and medicinal bark has resulted in habitat modification, with concomitant impacts on bird communities. Specifically, harvesting activities have increased the frequency of canopy gaps, driving changes in understory habitat. Furthermore, increasing levels of resource use have negatively affected the functional organisation of bird communities and forest-specialist species richness, driving changes in species composition. Management actions are needed to regulate resource use in order to mitigate the negative ecological impacts associated with high levels of extraction.

Supervisor: Prof MI Cherry

CHING WEI LI, Kevin (Physics)

A ghostly tail of the Hoyle state and its breathing-mode excitations

Carbon-12 is almost exclusively produced in exploding stars from a combination of ^4He and unstable ^8Be , which derive from an excited three-alpha resonance named the Hoyle state. The presence of an unestablished monopole strength above this resonance would be both astrophysically and structurally significant. This was investigated by meticulously analysing a new $^{14}\text{C}(^1\text{H},^3\text{H})^{12}\text{C}$ measurement simultaneously with several other datasets recorded with the K600 magnetic spectrometer facility. The energy and width of this state were established and need to be recognised in data compilations.

Supervisor: Prof P Papka

Co-supervisor: Prof FD Smit (external)

LOUW, Carla (Biochemistry)

Kinetic modelling of steroid biosynthesis

Steroid hormones play a key role in various processes, ranging from immune and inflammatory responses, to water and electrolyte balances, to sexual development and growth. Mathematical models were constructed for three systems where steroid biosynthesis was dysregulated, lead in to disease: hypocortisolism in Angora goats, 11-oxygenated androgen metabolism in liver cells and steroidogenic activity in prostate cancer cells. In close collaboration with experimentalists, an experimental design was followed that led to maximal identifiability of model parameters for the three systems. Subsequently, the models were used to analyse and identify interference points in the steroid networks.

Supervisor: Prof JL Snoep

Co-supervisor: Dr DD van Niekerk

LUMKWANA, Dumisile (Physiological Sciences)

Investigating the role of spermidine and rilmenidine on autophagic flux and cell death in a model of Alzheimer's disease

Alzheimer's disease is a progressive neurodegenerative disorder characterised by multiple cognitive deficits and autophagy dysfunction, leading to neuronal toxicity. Although spermidine and rilmenidine both enhance autophagy, the relationship between autophagy activity, protein clearance and cell death onset remains unclear. The *in vitro* results of this study revealed a concentration-dependent effect of the drugs that is cell type- and injury-specific. Moreover, a 3-D CLEM protocol was successfully implemented and the study revealed that spermidine increases autophagosome surface area concentration-dependently. The *in vivo* results revealed that both dosages of spermidine robustly protected against oxidative stress and neuronal damage in the hippocampus and cortex.

Supervisor: Prof B Loos

Co-supervisor: Prof C Kinnear

MAGAGULA, Sifiso (Polymer Science)

The effect of controlled rheology on the molecular structure of heterophasic ethylene-propylene copolymers

Controlled rheology using cyclo-aliphatic peroxides is the most common way of controlling melt viscosity and processability of commercially important polyolefins. In the case of the complex heterophasic ethylene-propylene copolymers, controlled rheology often leads to unwanted changes in physical properties of the polymer. Understanding of the way a specific peroxide reacts with the complex copolymer, and the resultant changes in chemical composition distribution, was developed. For the first time, solid-state ^{13}C NMR spectroscopy was used to study the reaction of the peroxide and the polymer *in situ*.

Supervisor: Prof AJ van Reenen

MAREE, Johannes (Biochemistry)

Identification and genomic distribution of select combinatorial post-translational modification patterns of Trypanosoma brucei histones

The occurrence and genomic distribution of novel post-translational modification of the core histones were determined in the human and insect life stages of *Trypanosoma brucei*, the causative agent of African sleeping sickness, in search of epigenetic targets for the development of new treatments. Tri-methylation of lysine 10 and hydroxylation of proline 40 of histone H3 and multiple acetylated lysines in the C-terminal tail of histone H2A were found. The genomic distribution of the latter modification was mapped, and shown to be strongly enriched at transcription start sites. This enrichment likely enables assembly of the transcription apparatus upstream of genes.

Supervisor: Prof HG Patterton
Co-supervisor: Prof A Louw

MATJELO, Naleli (Physics)

Implementation of an ytterbium 171 trapped ion qubit

A system for trapping ytterbium ions was designed, assembled and implemented. The core of this is a linear Paul trap, which uses oscillating, high-frequency electric fields to confine ions under ultra-high vacuum conditions. Lasers with carefully controlled wavelengths were used to cool single trapped ions close to zero degrees Kelvin and to manipulate their electronic dynamics. By combining laser control with microwave control, the ions were operated as quantum bits and quantum bit-flips were implemented. In addition, a theoretical project on power law noise modelling was completed in preparation for stabilising lasers to optical cavities susceptible to power law noise.

Supervisor: Prof H Uys (external)
Co-supervisor: Dr CM Steenkamp

MOGWERA, Koketso (Biochemistry)

Membrane permeability and transport studies of coenzyme A, its precursors and antimetabolites

Membrane permeability is an important but often overlooked aspect of drug discovery. Using the biosynthesis and inhibition of essential cofactor coenzyme A (CoA) as context, this knowledge gap was addressed by using biophysical approaches to identify the features that apparently enable phosphopantetheine (a CoA biosynthetic intermediate) to enter certain cells through passive diffusion. The discovery of a correlation between membrane fluidity and permeability will not only inform strategies for improving the membrane permeability of new antibiotics developed to target CoA-related processes, but may also open new avenues for intervention in genetic diseases of CoA biosynthesis.

Supervisor: Prof E Strauss
Co-supervisor: Dr M de Villiers

MURIMA, Douglas (Polymer Science)

Development of advanced methods for the analysis of star and highly branched polymers

Branching in polymers exists naturally or is deliberately introduced to produce materials with unique rheological properties. These properties lead to important applications in automotive, packaging, medical and construction industries. Ongoing interest in the synthesis of tailor-made branched polymers continues to add to the growing need for advanced analytical methods. The combination of advanced separation and characterisation techniques as the best way to unravel the molecular complexity of branched polymers was demonstrated. Valuable insights into structure–property correlations of branched polymers as affected by the degree of branching, chemical composition and molar mass are provided.

Supervisor: Prof H Pasch

NEL, Sanet (Microbiology)

Isolation and identification of polysaccharide (gum)-producing bacteria from a sugarcane factory and strategies to prevent their growth

The South African sugar industry is under immense pressure to ensure that each harvest produces cane of the best quality. Polysaccharide (gum)-producing bacteria were identified by using 16S rRNA gene sequencing and sequencing of housekeeping genes pheS (encoding the phenylalanyl t-RNA synthase alpha subunit), *dnaA* (chromosomal replication initiation protein) and *atpA* (alpha subunit of ATP synthase). In addition to *Leuconostoc mesenteroides*, high cell numbers of *Weissella confusa* and *Weissella cibaria* were recorded for the first time. *Bacillus subtilis* and *Bacillus amyloliquefaciens* were isolated from production streams in a sugarcane-processing facility. A specific biocide is recommended to control bacterial spoilage.

Supervisor: Prof LMT Dicks
Co-supervisors: Prof A Endo, Mr SB Davis (external)

OCTOBER, Jacquin (Chemistry)

The use of mononuclear and multinuclear complexes of rhodium and ruthenium in catalytic olefin hydroformylation and hydroaminomethylation reactions

Synthetic approaches were developed to produce new rhodium and ruthenium complexes based on N,N-chelating ligands. These metal complexes were employed as catalysts in the hydroaminomethylation of alkenes. This is a tandem process in which relatively cheap olefin feedstocks are transformed into value-added speciality chemicals. Novel protocols to yield amino-functionalised organic compounds were developed. These materials could be applied as precursors in the production of high-value surfactants and pharmaceuticals. The initial investigations into the application of this catalytic process in the valorisation of biomass-derived feedstock show great promise.

Supervisor: Prof SF Mapolie

PHAIR, David (Zoology)

Social organisation and pathogen transmission in African ants: At what point do social immunity benefits diminish?

Ants exploit a range of behaviours that ameliorate colony diseases, termed 'social immunity'. Species with different life histories combat fungal infections using grooming behaviour and organisational immunity. The three African ant species assessed responded to pathogen exposure by increasing interaction rates and lowered the number of spores on their cuticle if allowed to groom. This observation was further supported by mathematical models. Commonly, ants increased frequency and decreased duration of grooming in response to pathogen exposure. This represents the first assessment of social immunity in South Africa, showing that ants use a range of social immunity behaviours to mitigate fungal exposure.

Supervisor: Prof TC Wossler
Co-supervisor: Prof C Hui

POWRIE, Yigael (Physiological Sciences)

The role of DHEA in the aetiology of modern chronic disease

DHEA is a sex hormone precursor with known anti-inflammatory effects. DHEA levels naturally decline with ageing. Maintenance of brain DHEA levels could delay the onset of chronic diseases, especially neurodegenerative disease. Using UPC²-MS/MS methodology, data generated in both human and rodent models indicated that brain astrocytes are incapable of DHEA biosynthesis, thereby refuting earlier reports of intracrine DHEA biosynthesis, which was based on data generated using inferior techniques. Instead, astrocytes were shown to metabolise exogenous DHEA into anti-inflammatory metabolites, such as androstenediol (A5), which may explain beneficial effects commonly ascribed to DHEA in the context of inflammatory conditions and ageing.

Supervisor: Prof C Smith
Co-supervisor: Prof AC Swart

RABENANTOANDRO, Andry (Mathematics)

Torsion bounds for Drinfeld modules with complex multiplication

Drinfeld modules are mathematical structures of current interest in the field of number theory. Their torsion submodules are finite, and interest lies in explicit bounds on their size. In the case of Drinfeld modules with additional symmetry (known as complex multiplication), such bounds were obtained with fully explicit constants and optimal asymptotic order in two important cases: firstly, in arbitrary rank when the endomorphism ring is a maximal order, and secondly for arbitrary endomorphism rings, but in rank two. To achieve this, a completely explicit Mertens-type theorem for global function fields was obtained, which is of independent interest.

Supervisor: Prof F Breuer (external)

Co-supervisor: Prof SG Wagner

REYNEKE, Brandon (Microbiology)

The potential of solar disinfection in combination with bacteriophage biocontrol to reduce the health risks associated with contaminated harvested rainwater

Large-volume solar reactors were developed to treat rainwater in rural areas and urban informal settlements. Quantitative microbial risk assessment studies in combination with molecular-based viability assays indicated that the treated rainwater was safe to use for various non-potable domestic activities. In addition, a bacteriophage biocontrol strategy was developed for rainwater pre-treatment. These viruses not only destroyed the pathogenic bacteria in the rainwater, but were also able to sensitise these target bacteria to the solar treatment and decrease their virulence (potential to infect). The use of bacteriophages may therefore decrease the health risk associated with using rainwater.

Supervisor: Prof W Khan

Co-supervisor: Prof S Khan (external)

SMART, Sandi (Oceanography)

Modern-ocean ground-truthing of planktic foraminifer nitrogen isotopes: A proxy for surface ocean nutrient conditions

The nitrogen isotope ratios of organic matter trapped within the fossil shells of planktic foraminifera, upper-ocean dwelling zooplankton, vary through major climate changes in Earth's history and have been interpreted as recording past nutrient (and, indirectly, carbon) drawdown by marine algae. Before this study, however, little was known about controls on the nitrogen isotope composition of living foraminifera, not to mention post-mortem alteration. The results supported the use of shell-bound nitrogen as an indicator of the living organism, but also suggested that foraminifera reflect a more complex interplay of nitrogen-cycling processes, including, but not limited to, nutrient consumption.

Supervisor: Prof AN Roychoudhury

Co-supervisor: Dr S Fawcett (external)

SMITH, Shane Raymond (Physics)

Construction of a spectroscopic terahertz time-domain ellipsometer

The terahertz (THz) region is a technologically important part of the electromagnetic spectrum, enabling the monitoring of structural changes in molecules and crystals. This is especially relevant to large biological molecules that absorb in this region. A novel THz ellipsometer was constructed and tested that allows measurement of optical properties of samples in water, which is impossible with traditional THz setups. A range of data extraction techniques to analyse the acquired data was developed, thereby illustrating that it is possible to investigate aqueous samples in reflection using THz radiation, despite the strong absorption of this radiation by water.

Supervisor: Dr PH Neethling

Co-supervisor: Prof EG Rohwer

VAN DYK, Jacobus (Biochemistry)

Mathematical modeling of glycolysis in skeletal muscle cells

Patients with type II diabetes show a decrease in insulin sensitivity and high blood glucose concentrations due to a lowering of glucose metabolism in muscle and fat tissue. Insulin sensitivity is dependent on three modules: insulin signalling, glucose transport and glucose metabolism. To determine the contribution of the metabolism module, all the enzymes in the central glucose metabolic pathway of skeletal muscle cells were characterised, and a detailed mathematical model was constructed. The model was validated in time course experiments, for which an analytical method to separate and quantify all the intermediates in the pathway was developed.

Supervisor: Prof JL Snoep

Co-supervisor: Dr DD van Niekerk

VAN DER WESTHUYZEN, Alet (Chemistry)

Bioactive compounds inspired by nature: Synthesis, stability and delivery

Natural products can be considered privileged structures serving as structural muses for the design of potent bioactive small molecules. Drawing inspiration from the marine-derived alkaloid rigidin and the fungal metabolite sphaeropsidin A, two challenges experienced during drug development of these compounds, namely poor aqueous solubility and physicochemical instability, were investigated. In addition to contributions made to the small-molecule synthetic arena through utilisation of multi-component reactions for the synthesis of rigidin analogues, applied research involving separation science, structural elucidation and polymer chemistry was utilised. This multi-disciplinary approach resulted in the development of novel natural product-inspired compounds holding promise as anticancer agents.

Supervisor: Prof WAL van Otterlo

Co-supervisor: Prof B Klumperman

VAN RENSBURG, Wilma (Biochemistry)

The tyrocidines in the creation of antimicrobial cellulose and sterilizing materials

Many industrial sectors are plagued with continual microbial infections linked to surface contamination. A group of natural antimicrobial peptides, the tyrocidines, adheres tightly to various synthetic and natural materials, such as plastics and cellulose-type materials. Tyrocidine-treated filters and packaging materials exhibited rapid and potent self-sterilising activity and maintained antibacterial activity after washing with various solvents and high-temperature exposure. This robustness is due to a unique packing and layering of the peptides by a self-assembly process on material surfaces. The tyrocidine-functionalised materials could be used as eco-friendly products to prevent microbial contamination of surfaces without resistance development.

Supervisor: Prof M Rautenbach

VISSER, Johan (Physiological Sciences)

Manipulation of macrophage phagocytosis: Development of an endogenous delivery system

The use of highly toxic drugs to combat multidrug-resistant infections necessitates the use of drug delivery systems to limit undesired side-effects resulting from systemic administration. In an approach shifting the paradigms of host-microbe interaction research, microbial effectors listeriolysin-O and actin-assembly-inducing protein were synthesised and purified using a novel *E.coli*-based heterologous protein expression system, with incorporation of green fluorescent protein. These effectors were coated onto simulated drugs, opsonising them for ingestion by primary, M1-polarised human macrophages. Subsequently, these effectors facilitated drug expulsion from these macrophage shuttles. Importantly, simulated drugs were released from carrier cells without lysis of host macrophages.

Supervisor: Prof C Smith

Co-supervisor: Dr AD van Staden

VREULINK, Jo-Marie (Microbiology)

Molecular characterisation of *Cryptococcus neoformans* and *Cryptococcus gattii* present in tree hollows, their antifungal susceptibility, and chemical factors influencing their growth on woody debris

The environmental occurrence of the *Cryptococcus neoformans*/*Cryptococcus gattii* species complex, known to cause cryptococcosis among HIV/AIDS patients, was investigated. Numerous pathogenic cryptococci, known to produce infectious spores during mating between MAT α and MAT α strains, were discovered on trees in recreational areas in South Africa. Indications were obtained that changes in the chemical composition of these trees could account for the scarcity of MAT α isolates. In addition, these changes could have induced temporal changes in the susceptibility of *C. gattii sensu stricto* populations in the trees to the commonly used antifungal drug fluconazole.

Supervisor: Prof A Botha

Co-supervisors: Dr T Boekhout, Prof H Vismer (external)

WASO, Monique (Microbiology)

Human health risks associated with harvested rainwater: Implementation of biocontrol strategies

The predatory bacterium *Bdellovibrio bacteriovorus* was assessed as a biocontrol agent in the treatment of harvested rainwater. In initial experiments, the predator reduced the concentration of the opportunistic pathogens *Pseudomonas*, *Klebsiella*, *Staphylococcus* and *Enterococcus* spp. *Bdellovibrio bacteriovorus* was then applied as a biological pre-treatment in combination with solar disinfection for rainwater treatment and enhanced the disinfection or removal of specifically Gram-negative bacteria from the rainwater. The expression of predatory specific genes indicated that *Bdellovibrio* does not actively grow in the presence of Gram-positive prey or that growth of the predator may be delayed in the presence of these prey cells.

Supervisor: Prof W Khan

Co-supervisor: Prof S Khan (external)

WILLIAMS, Paul Henry (Physics)

Lorentz symmetry in non-commutative field theories: Commutative/non-commutative dualities and manifest covariance

The short-length scale structure of space-time and the emergence from it of space-time as we perceive it at long-length scales lie at the core of the difficulties in reconciling gravity and quantum mechanics. Non-commutative space-time seems to offer an elegant solution to this difficulty, but faces several challenges in terms of the observed long-length scale Lorentz symmetry. This study explored several models of Lorentz symmetry, preserving non-commutative space-times and the construction of field theories on them. It was also explicitly verified that these theories indeed agree with standard Lorentz invariant field theories on commutative space-times at long-length scales.

Supervisor: Prof FG Scholtz

Co-supervisor: Dr JN Kriel

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

Magister in die Natuurwetenskappe
Master of Science

Agyare-Dwomoh, Yaa Nyantakyi (Geology)
Asmus, Justin Joseph (Microbiology)
Avgenikos, Moscos (Chemistry)
Badenhorst, Melinda (Biochemistry) (*cum laude*)
Boodhoo, Kiara (Physiological Sciences) (*cum laude*)
Bröcker, Johann Heinrich Ludwig (Microbiology)
Burengengwa, Gloria (Mathematics)
Burger, Anna-Mart (Biochemistry)
Cameron, Scott Alexander (Physical and Mathematical Analysis) (*cum laude*)
Carolus, Timothy Gary (Physics)
Christoph, Marc (Computer Science)
Comuso, Christina (Geology)
Cronje, Anna Hendrina Petronella (Polymer Science)
Cunningham, Randy Duwayne (Polymer Science) (*cum laude*)
Daniel, Jeanne Elizabeth (Applied Mathematics) (*cum laude*)
De Wet, Sholto (Physiological Sciences) (*cum laude*)
Du Buisson, Johannes Petrus (Physics) (*cum laude*)
Du Plessis, Hildegard (Polymer Science)
Du Preez, Pieter Herodus (Genetics) (*cum laude*)
Du Toit, Lauren Anita (Microbiology)
Eaby, Alan Calvin (Chemistry) (*cum laude*)
Elmahdi, Reem Omer Mohammed (Applied Mathematics)
Frickel, Emma (Genetics) (*cum laude*)
Gaborone, Mamosete Dorothy (Microbiology)
Gould, Khaya Timothy (Chemistry)
Hacking, Chris James (Geo-informatics) (*cum laude*)
Hamilton, Megan April (Genetics)
Harilall, Zita Michelé (Geology)
Hoffman, Mizpah Jeshurun (Botany)
Jackson, Tassin Kim (Genetics)
Josias, Shane (Applied Mathematics) (*cum laude*)
Keret, Rafael (Plant Biotechnology) (*cum laude*)
Kubyana, Mmatlou Simeon (Mathematics)
Laing, Brandon Alexander (Mathematics) (*cum laude*)
Le Cordeur, Nathan Seth (Genetics)
Leid, Alexander (Computer Science) (*cum laude*)
Meyer, Johannes Petrus (Biochemistry) (*cum laude*)
Mohamed, Mohamed Naweed (Genetics)
Myburgh, Marthinus Wessel (Microbiology) (*cum laude*)
Nell, Charlotte Maria (Geography and Environmental Studies B)
Newman, Gregory (Applied Mathematics)
Nkosi, Nondumiso Belvia (Physiological Sciences)
Nunes, Jean Massimo (Physiological Sciences) (*cum laude*)
Nyatsanga, Simbarashe Linval (Applied Mathematics)
Obanla, Motunrayo Elizabeth (Mathematics)
October, Francois Marc (Biochemistry)
Paulse, Lambert Owen (Polymer Science)
Pesch, Heino (Polymer Science)
Pieters, Bernardus Lambertus (Geology)
Robertson, Tremaine Wentzel (Mathematics)
Rosmarin, Michael Raphael (Plant Biotechnology)
Samie, Shakier (Microbiology) (*cum laude*)
Shaw, Klarissa (Biochemistry)
Slabbert, Johannes Diederick (Genetics)
Speelman, Tammy Simone (Biochemistry) (*cum laude*)
Steyn, Kim Henry (Chemistry)
Stoch, Benjamin (Geology)
Stroebe, Graeme Brian (Geology)
Thompson, Peter Albert (Applied Mathematics) (*cum laude*)
Van den Heever, Christiaan Frederik (Microbiology)
Van der Walt, Felix Etienne (Plant Biotechnology) (*cum laude*)

Van Staden, Wynand (Mathematics)
Vermeulen, Liezl Mari (Geo-informatics) (*cum laude*)
Wei, Xueting (Chemistry)
Wissing, Julian (Biochemistry)
Zainabu, Simotwo Chepkirui Faith (Mathematics)

Honneurs-Baccalaureus in die Natuurwetenskappe
Bachelor of Science Honours

Fennell, Andrea Joy (Microbiology) (*cum laude*)
Hugo, Paul Abraham (Mathematics)
Mukwevho, Mukovhe Justice (Physical and Mathematical Analysis)
Rossouw, Michelle (Microbiology) (*cum laude*)
Steffen, Heidi Christa (Microbiology) (*cum laude*)

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

**Baccalaureus in die Natuurwetenskappe
Bachelor of Science**

Aanhuizen, Oscar Mike Junior
Adams, Jamie
Alex, Ndahafa Samira
Allisaib, Ireland Leah
Andrag, Lizanne
Atkinson, Bradley Derrick
Badenhorst, Janelle Carladene
Barwick, Keegan George
Berndt, David
Bester, Jacoba Dorothea Christina
Blignault, Jacques
Bokolo, Avuyile Masilakhe
Botha, Marilize
Botha, Stephan Bosman
Bowers, Jason Dylan
Bredenkamp, Jhade Cameron
Bronstring, Megan Ashley
Butler, Emer
Buys, Emma Paige
Carstens, Althea
Carstens, Gezie Maria
Charles, Clayton Christopher
Claassen, Carl Jesse
Colman, Brandon Paul
Crocker, Tayla
Cupido, Candice Joy
Currie, Louise Grace
Damons, Charné Leigh
Daniels, Keano Felix
Davids, Damian Reuben
Davidson, Tiffany Jean Boyne
Dawe, Katie Helen
De Beer, Emanuel
De Freitas, Kristen Robyn
Dijkstra, Hessel
Dreyer, Kalcey
Du Toit, Gerhardus Jacobus Saaiman
Ebrahim, Rasheeka
Engelbrecht, Elke Hanlie
Esau, Gerald Edwin
Eva, Zachary Edward
Farmer, Anthea Greer
Fourie, Dana
Fresen, Nicholas Gabriel
Geeraert, Gaëlle Kris Nadine
Gelderblom, Michelle Valerie (*cum laude*)
Godden, Tess
Golda, Celine Nathalie
Good, Kirsten
Govender, Ettana
Govender, Saiuree
Greyling, Eugene
Hibberd, Matthew
Hill, Henry
Hlophe, Lindani Melusi
Hoffman, Sean
Hoole, Matthew Cotterell
Hooseria, Kyle Kemo
Howard, Emma
Hoy, Christopher James
Human, Cornelius Jacobus
Human, Lizelle Cecelia
Humphreys, Chanté Richelle
Hurling, Liam Lionel
Jacobs, Georgia Lesley
Jentzel, Darren
Jonas, Nicolene
Karsten, Michelle Ann
Kelly, Logan
Ketley, Okello
Kraay, Bertmari
Kubeka, Thiyasizwe Khwezilokusa
Kwizera, Deborah
Lea, Dominique Tracy
Lock, Calab Aaron
Lohrentz, Catherine Gaynor
Lucas, Klensch Aken
Mac Intosh, David Gray
Majeke, Zintle Natalie
Maluleke, Lethabo Muriel
Maneveld, Ammaar
Maphumulo, Siphosethu Cassandra
Marcinko, Spencer Patrick Gengis
Martin, Lauren Courtney
Mason, Talya Julie
Mert, Julian John
Milella, Jayd Vincent
Mongalo, Dikeledi Ngoakoana Marcia Rinkie
Moore, Daniella
Mpayimana, Grace Keza
Mthethwa, Nkosinathi Cyril
Naidoo, Suhasini
Nel, Francois
Nieuwstad, Joshua Kade
Norris-Jones, James Scott
Ntimane, Bongane
O'Connor, Mason
Oosthuizen, Bianca
Pearson, Moegamat Taurieq
Pillay, Kirthana
Rakoma, Tshepiso
Rodrigues, Sergio Manuel
Rosolen, Sebastiano
Rush, Zachary Morgan
Schmidt, Carli
September, Caryn Jenaide
Shearer, Jenna-Lee
Shepherd, Kelly Anne
Singels, Luca
Smith, Matthew Tyler
Snyders, Jamie John Stephen
Stander, Inge
Stanvliet, Zahn
Steyn, Brian
Steyn, Kaylin Verna
Sundgren, Rebecca Kirstin
Swanepoel, Henco Kotze
Teessen, Dirk Cornelius
Theron, Natasha
Thompson, Chadley
Tieg, Kelsey Anne
Todd, Chad Ross

Van den Berg, Melissa
Van Eeden, Simon Streicher
Van Rooyen, Fouché
Van Vuuren, Monre
Van Wyk, Jamie Kate Danielle
Van Zyl, Albertus Petrus
Van Zyl, Simone
Veen, Triston
Vermeulen, Jonathan David
Vermeulen, Sean Amanda
Viljoen, Jade
Visagie, Julani
Wagner, Jason
Williams, Taryn
Wilson, Hayley
Wium, Emtia
Wolff, Mirko
Wykerd, Dylan



Fakulteit
Opvoedkunde

Faculty
Education

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte
Doctor of Philosophy

ASIA, Henry Peter (Education Policy Studies)

Inklusiewe demokratiese burgerskaponderwys as 'n verdedigbare instrument om dissipline en geweld in Suid-Afrikaanse skole te beperk

Hierdie studie was 'n interpretatiewe ondersoek na die probleem van ondissipline en geweld in Suid-Afrikaanse skole ná 1994, die oorsake daarvan en die regering se pogings om die probleem die hoof te bied. Die doel van die studie was om die tekortkominge van die post-1994-onderwysstelsel te identifiseer insake die hantering van geweld in skole en 'n inklusiewe vorm van burgerskaponderwys as alternatief voor te hou. Inklusiewe demokratiese burgerskaponderwys (IDBO) omarm alle diverse oortuigings en kulturele groepe in Suid-Afrika en bevorder die beraadslagende *ubuntu*-benadering tot konflik. IDBO word verder ondersteun deur kernsosiaaldemokratiese waardes soos respek, verdraagsaamheid, deernis en verantwoordelikheid.

Promotor: Prof Y Waghid

KESE, Pamela Phumla (Curriculum Studies)

Academic literacy practices of African language-speaking first-year Private Law students at a multilingual university

This study argues that African languages can be used concurrently with other languages to yield desirable academic productivity in higher education. First-year students who have official African languages as their home languages were consulted and observed in Private Law I lectures and tutorials over the course of a year. The findings indicated that students generally disfavoured dual-medium lectures and unbalanced code switching in lectures. However, co-linguaging strategies and question-answer lecturing styles were seen as useful. Regardless of the type of school they attended, students assigned valued to using their African home languages with English (translinguaging) in self-directed, communal learning activities.

Supervisor: Prof C van der Walt

LUWANGO, Luiya (Curriculum Studies)

The development of pre-service teachers' mathematical knowledge for teaching flexible mental computation

This study explored ways to develop preservice teachers' mathematical knowledge for teaching flexible mental calculation through design-based research from a realistic mathematics education instructional framework. A mixed-methods design yielded data from questionnaires, pre-and post-intervention tests and interviews, and observations. The questionnaire survey focused on 51 preservice teachers' existing knowledge, beliefs and experience of flexible mental computation skills development at school, and these were triangulated with observations during an intervention and interviews with 15 participants. The findings indicated that preservice teachers' rote methods of mental calculation can become more flexible with the use of a hypothetical learning trajectory that starts with context problems and focuses on the generalisation of patterns in groupings of calculation problems.

Supervisor: Dr E Lampen

NGWENYA, Memoria Celiwe (Education Policy Studies)

Disruption of higher education policy through an ethic of care in South Africa

Educational reforms in South Africa have not translated into social transformation, as envisioned in *White Paper 3: A Programme for the Transformation of Higher Education* of 1997 and the *White Paper for Post-school Education and Training: Building an Expanded, Effective and Integrated Post-school System* of 2013. Despite higher education institutions having put structures in place, institutional culture continues to alienate students from poor schools, which depicts higher education as still fuelled by social contradictions and asymmetries of power and privilege. The study recommends that the bureaucracy of schooling needs to respond in a more humanising way to lack of equity and equality.

Supervisor: Prof Y Waghid

SIMASIKU, Frederick Simasiku (Curriculum Studies)

Contributions of education for sustainable development (ESD) to quality education: An action research study on the implementation of fieldwork in the school Geography curriculum

This dissertation reports on an action research project undertaken with Geography teachers in the Khomas region of Namibia. The study investigated how the integration and implementation of education for sustainable development, through the application of geographical fieldwork as a teaching method, contribute to the delivery of quality education in the Namibian senior secondary Geography curriculum. The study provides key recommendations on how to effectively integrate and implement education for sustainable development in the Namibian senior secondary Geography curriculum. It further provides insights into how Goal 4 of the United Nations Sustainable Development Goals can be exemplified in local Namibian classroom practices.

Supervisor: Prof LLL le Grange

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

**Magister in die Wysbegeerte
Master of Philosophy**

Jacobs, Lorette (Higher Education) (*cum laude*)
Mareka, Lungisile Duduzile (Education and Training for Lifelong Learning)
Mkuzangwe, Sefora Alice (Higher Education)
Seshoka, Makwena Audrey (Education and Training for Lifelong Learning)
Viljoen, Philippus Johannes (Higher Education)
Wessels, Lizette (Higher Education)

**Magister in die Opvoedkunde in Opvoedkundige Sielkunde
Master of Education in Educational Psychology**

Brassell, Jamie Miriam
Hess, Sonia Anne
Mavundla, Slindile Sbhakhile Penelope
Nyback, Monique
Rudolph, Donovan
Van der Westhuizen, Magdaleen

**Magister in die Opvoedkunde
Master of Education**

Bekker, Petrus Johannes (Education Policy Studies)
Chilungo-Jana, Doreen Amina (Curriculum Studies)
Esau, Basil (Educational Support)
Jacobs, Vanessa (Education Policy Studies)
Kaniita, Paulina Ndapewa (Curriculum Studies)
Le Roux, Jean-Pierre (Curriculum Studies) (*cum laude*)
Malherbe-Janse van Rensburg, Lesinda (Educational Support)
Moyo, Ndumiso Michael (Curriculum Studies)
Nel, Tarina (Curriculum Studies) (*cum laude*)
Roelofse, Ceri (Curriculum Studies)
Stewart, Grant Charles (Educational Support)
Tembwe, Memory Lubasi (Curriculum Studies)

**Honneurs-Baccalaureus in die Opvoedkunde in
Onderwysontwikkeling en Demokrasie
Bachelor of Education Honours in Education Development and
Democracy**

Molise, Mathapelo Elizabeth

**Honneurs-Baccalaureus in die Opvoedkunde in Taalonderwys
Bachelor of Education Honours in Language Education**

Posthumus, Amy Leigh
Theart, Unandi
Van der Hoven, Antoinette (*cum laude*)

**Nagraadse Onderwysertifikaat
Postgraduate Certificate in Education**

Esau, André Jason

**Nagraadse Onderwysertifikaat in Verdere Onderwys- en
Onderrigopleiding
Postgraduate Certificate in Education in Further Education and
Training Teaching**

Cupido, Tamryn Jean
Diwe, Rabelo Christopher
Makinana, Elowo Sonette
Martin, Charles Henry
Ngcebetsha, Qaqamba
Ngeshe, Nthabiseng
October, Barry Arthur
Parry, Eraine Kimberley (*cum laude*)
Sitsheke, Vusikhaya
Van der Merwe, Anika

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

**Baccalaureus in die Opvoedkunde (Algemene Onderwys)
Bachelor of Education (General Education)**

Coetzer, Marike (Foundation Phase)
Edwards, Bronwyn (Intermediary and Senior Phases)
Harmse, Sumari (Foundation Phase)
Loff, Fernando Terence (Intermediary and Senior Phases)

**Gevorderde Diploma in Opvoedkunde in Senior Fase
Natuurwetenskap-onderrig
Advanced Diploma in Education in Senior Phase Natural Sciences
Teaching**

Bam, Nosipho
Base, Tembeka
Basterman, Venita Marenda
Bhonga, Vukile Templeton
Bidi-Baduzza, Nontuthuzelo Lucy
Bokoloshe, Ntombekhaya
Boqwana, Andiswa
Cele, Nokubonga Premoria
Cita, Kwanele Thandile
Citwa, Theodorah Nomandlovu
Colepi, Nomthandazo
Dyantyi-Gxarisa, Ndedwa Nontlahla
Fihlani, Vuyelwa Aphelele Onke
Galela, Phumla Almah
Gampe, Tholiswa Gloria
Gcanga, Lindelwa Vathiswa
Giyose, Nobathembu
Jack, Nomvuyo Olga
Jokazi, Sandiswa Sharoline
Jovula, Sikhumbuzo
Kampi, Thozamile Gideon
Kebhana, Vuyile
Keti, Ayanda Lunga Masibulele
Ketshana, Nontlaha Duduzile
Koto, Yandisa Lewis
Lekhesa, Mohanoa
Lugodlo, Nomfuziselo
Luthuli, Pearl
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Mali, Andile
Mantewu, Buziwe Rosemary
Mapoloba, Luvuyo
Mathontsi, Nomandulela
Mayekiso, Liziwe
Mbambo, Ntombekhaya
Mdledle, Zinhle Antonia
Mehlomakhulu, Mthonizima Samuel
Mfaku, Mlungisi
Mfamana-Toto, Thobeka Mirriam
Mgauli, Bonginkosi
Mhlontlo, Siziwe
Mkaliphi, Zandise
Mlingo, Fikile
Mngomeni, Bulelwa Joyce
Mngqibisa, Naledi
Mngwembe, Drost Lekganso
Molotsi, Zukiswa Portia
Mondliwa-Zibaya, Bomkazi Sweetness
Msindo-Fulela, Neliswa
Msindwana, Siphokazi

Mtshabe, Nomalugelo Gloria
Mtwa, Nonzolisio
Ndlebe, Mzimasi
Ngqoleka, Celiwe
Njenjani, Nontlahla
Nobengula, Vulindlela
Nqodi, Noloyiso
Ntamesi, Ayanda Eric
Ntliziywana-Mahlasela, Nolunyulo
Ntloko, Ziphelele
Ntsenyeho, Matseliso Patience
Ntshentshe, Doris Ntombizandile
Nyombolo-Giwu, Teresa
Pato, Nokuza Kanyisa
Poncane, Lisanda
Pongoma, Phumla Letiua
Poswa, Notemba
Qwalana, Nomasivazi
Rasi, Zoliswa
Sandi, Vuyiswa Gladys
Scholtz, Pumeza Pearl
Shazi, Octavia Bongekile
Sipuka-Mbonga, Zanele
Skoti, Thembisa Thelma
Sodinga, Sizwe
Sogoni, Prettygirl Nomveliso
Spondo, Ntomboyise Gloria
Stuurman, Nozuko Signoria
Sukwana, Sindiswa Sylvia
Timla, Ntombozuko
Trom, Anthony
Tuswa, Wona
Tyala, Ntombekhaya
Yako, Ntombizanele Mirriam
Zawana, Sifikile



Fakulteit
Regsgeleerdheid

Faculty
Law

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte
Doctor of Philosophy

AFRIKA, Sasha-Lee Stephanie (Mercantile Law)

State aid to state-owned enterprises in South Africa: The need for a comprehensive state aid policy – a competition law inquiry

State-owned enterprises (SOEs) are found in several sectors of the South African economy. Government purports to utilise them as vehicles for developing the post-apartheid economy. However, endless financial support from government to SOEs has drained the state coffers and lies at the heart of failures of corporate governance and actions that harm competition, with which SOEs have become synonymous. Yet, this form of support is not covered by the Competition Act 89 of 1998. This study considered state aid law that deals with state financial support of business firms in the European Union. It developed a regulatory model for state support that would be appropriate for South African circumstances.

Supervisor: Prof PJ Sutherland

HOFFMAN, Cornelia Hendrina (Mercantile Law)

The contribution mediation can make in addressing economic crime in corporate and commercial relationships in South Africa

Economic crime is complex and costly. Mechanisms for addressing it include plea and sentencing agreements, a model of negotiated justice available since 2001. This study proposes that mediation be added to existing alternative models for combating economic crime. Mediation involves negotiated and restorative justice and is a facilitative, flexible process affined to *ubuntu*. A new provision on mediated settlement agreements in the Criminal Procedure Act of 1977 is proposed. An accredited mediator will mediate between the public prosecutor, the perpetrator and the victim. The mediated settlement agreement will deal with compensation and a proposed sentence and must be court-approved.

Supervisor: Prof DW Butler

Co-supervisor: Prof GP Kemp

KOTZÉ, Tina (Public Law)

The regulation of agricultural land in South Africa: A legal comparative analysis

After 25 years of democracy in South Africa, the need to broaden access to land for citizens, without arbitrarily depriving landowners of their property, remains prevalent. Therefore, the study determined (a) to what extent government may interfere with and regulate private property rights in relation to agricultural land for redistribution purposes and (b) in light of the comparative analysis conducted between South Africa, Namibia and India, how government should conceptualise, regulate, acquire and redistribute agricultural land without impeding agricultural productivity. Ultimately, this study provides a comprehensive legal framework for the regulation and redistribution of agricultural land in South Africa.

Supervisor: Prof JM Pienaar

RAMAGES, Justin Ray (Public Law)

The courts, national security and the free flow of information

This study examined the tension between national security and the constitutional rights to access, receive and impart information. It proposes a definition of national security that would reduce the likelihood of the use of this notion to place unjustified restrictions on the free flow of information. It analysed the constitutionality of measures that limit the openness of judicial proceedings in order to protect national security. It also examined the question of whether and to what extent courts should defer to the judgement and expertise of the executive in deciding conflicts between national security and the free flow of information.

Supervisor: Prof H Botha

SIMELANE, Thobisa (Public Law)

Hostis Humani Generi: Towards an effective legal framework to combat maritime piracy – a South African perspective

Maritime piracy poses a serious threat to national, regional and international security. Military responses and the use of force under international law should not be the primary mode to combat piracy, but should be complementary to a sound international, regional and domestic legal (criminal justice) response. It is submitted that the piracy provisions in the Defence Act 42 of 2002 ought to be repealed in favour of a dedicated anti-piracy statute that will be aligned with the prevailing international crimes framework in South African law.

Supervisor: Prof GP Kemp

SIPHUMA, Nzumbululo Silas (Private Law)

The doctrine of notice in property law

A sells his farm to B and thereafter it is sold at a higher price to C and the farm is registered in the name of C. If C had notice of the contract with B, B is entitled to cancel the registration and have the farm registered in his name. This consequence has the anomalous effect that a personal right trumps a real right and can be enforced against a person not privy to the contract. This study explored the various theories advanced as to the dogmatic basis and scope of the doctrine and concluded that the doctrine can best be explained in terms of the derivative acquisition model and fraud in its modern appearance of *mala fides*.

Supervisor: Prof CG van der Merwe

VAN DER BURG, Anthea (Public Law)

Dialectical tensions in the jurisprudence of the International Criminal Court: Fair process, the demands for justice and the expectations of the international community

Dialectical tensions can be constructive. In international criminal law, competing interests, interpretation, consideration, reflection and reform inform the quest for justice for the alleged perpetrators and the victims of crime. The proposed reforms should be seen as an attempt to make the International Criminal Court (ICC) a more legitimate legal and institutional role player in the international criminal justice project. The ICC should not collapse under its own contradictions, but should find synthesis in a narrow, precise and fair construction of its role as the eminent tribunal where those accused of the most serious international crimes can face justice.

Supervisor: Prof GP Kemp

VAN DEVENTER, Susanna Maria (Private Law)

Regulating the form and substance of online contracts: South African and foreign perspectives

Online contracting is a global phenomenon that poses considerable challenges to a system of contract law, which accepts that parties are bound because they either gave their consent freely or created the impression that such consent exists. Unfortunately, online contracts often contain standard terms that are not only difficult to access, excessively lengthy and non-negotiable, but also one-sided and exploitative. After examining the position in some leading jurisdictions, this study concludes that imposing stricter consent-related requirements, such as heightened disclosure, would not significantly improve the position of consumers who use online contracts. However, it is further concluded that considerable scope exists to protect consumers by adopting legislation that governs certain standard online terms that are especially detrimental to them.

Supervisor: Prof JE du Plessis

Co-supervisor: Dr F Myburgh

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

**Magister in die Regsgeleerdheid
Master of Laws**

Barnes, Johndre Fabian
Bermosky, Chè John-Norman
Bodenstein, Nicholas Guy (*cum laude*)
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Du Plessis, Faith Bernelee
Farquharson, Ashleigh Saira (*cum laude*)
Greyvensteyn, Liane
Haynes, Stephan Johan
Henning, Francois De Villiers
Jakoet, Imaad
Janser, Simone Heloise
Jungclaus, Jan Lukas
Kleinhans, Brittany Lily Evelyn (*cum laude*)
Kolabhai, Reshard Lee (*cum laude*)
Kotze, Gert Steyn
Lang, Carolin Felizitas (*cum laude*)
Makile, Aviwe
Morcom, Christopher John
Msutu, Thalalolwazi (*cum laude*)
Müller, Danre Johan
Nhau, Prudence Tafadzwa
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Pretorius, Nandi
Rutgers, Joshua Leon
Schmitz, Clara Annelene
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Swanepoel, Sonja
Uanguta, Undamuje Ina
Weber-Steinhaus, Bruno Carl Ulrich

**Nagraadse Diploma in Belastingreg
Postgraduate Diploma in Tax Law**

De Beer, Darius
Mohamed, Sarfaraz
Mqoboli, Akhona
Musetsho, Lufuno Rodney

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

**Baccalaureus in die Regsgeleerdheid
Bachelor of Laws**

Akweenda, Ono Graca
Alexander, Charlane Daniele
Alexander, Megan Grace
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Bruwer, Malan
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Cloete, Jonathan Louw Peter
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De Sousa, Cherida Jade
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Demmer, Kassandra Destiny
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Dercksen, Denielle Alisje
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Engelbrecht, Anna Jacoba
Farmer, Tamsyn
Ferreira, Christoff Pieter Paul
Fooy, Jacques
Gibson, Annabelle
Goodwin, Kayleigh Hannah
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Herman, Deodat Sylveo
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Jimmy, Lauren Theresa
Johnson, Nicole Taryn
Karaan, Nurhal
Kilbourn, Claudia-Ann
Komen, Tivon Theodore
Kubheka, Nompumelelo Jeanette
Lavita, Gisele
Le Roux, Monique
Le Roux, Tyla
Louw, Albert
Mac Leod, Brandon Tavis
Madlala, Senamile Aphenndule Halala
Manuel, Russel Pall
Maree, Estian Daniel
Martin, Hayley Heather
Mkhonto, Simphiwe
Mostert, George Stephen
Nyathi, Nonjabulo Khwezi
O'Brien, Shannon Ann
Oncker, Janis
Phillips, Paige
Penaar, Kyle
Pond, Jonathan Simon
Pretorius, Jamie

Raath, Bastiaan Tsavo
Rall, Anscha
Rawstorne, Demi Cara
Relihan, Mieke
Roberts, Esmerelda Emmily
Schröder, Luke Edward Ferdinand
Schwartz, Jonathan Alexander
Scott, Ruben Alan
Sithole, Nonkululeko
Smith, Daniele-B
Spencer-Hicken, Josh
Steenkamp, Talitha
Steytler, Nicolas
Swart, Karla
Taljaard, Nicola
Teubes, Megan Jessica
Turley, Meagan Ruth
Van der Merwe, Michaela Lee
Van der Westhuizen, Yanelle
Van der Zanden, Herna-Dette
Visser, Lizanne
Weiss, Stephanie Rae
Wolf, Clemens Jürgen
Yuill, Aurora Fallon



Fakulteit
Teologie

Faculty
Theology

DOKTORSGRADE | DOCTORATES

Doktor in die Wysbegeerte
Doctor of Philosophy

KIM, Minseok (Systematic Theology)

Reading Calvin's theology in the light of contemporary discourses in public theology with reference to the Korean context

Public theology is gaining worldwide prominence in both the church and the academe. However, some Korean Protestant Christians and theologians have been sceptical of public theologies, as they feel that the approach is too progressive for their context. This study shows that there are particular historical, cultural and social reasons that inform this theological scepticism. As conservative Korean Protestants have a high regard for the person and work of the Reformer John Calvin, the study shows how Calvin's ministry and theological contribution can be related to the six characteristics of public theology developed by the contemporary German theologian and bishop Heinrich Bedford-Strohm. The study argues for the importance of adopting public theologies in the Korean context.

Supervisor: Prof DA Forster

PICKERING, Jordan Stuart Murray (Old Testament)

Sarah of Genesis 17: The place of women in the covenant according to the Genesis narratives

This creative thematic study of the Genesis narratives problematises the traditional patriarchal understanding of circumcision in the Hebrew Bible / Old Testament as a mark of 'covenant identity' that is defined by the male, thereby making women little more than vehicles to produce male offspring. The study argues that the Genesis narratives illustrate that dependence on the Lord enables life out of death and transforms curse into blessing. Genesis is not only about 'the beginning'; it is also about 'new beginnings' for both female and male.

Supervisor: Prof HL Bosman

SILAS, Dogara Turrang (New Testament)

The synagogue as locus of ministry in Luke–Acts: A socio-historical study of Luke 4:16–30

This study focused on the synagogue as a key locale for the ministry of the Lukan Jesus and Paul in Luke–Acts. Attention was given primarily to the non-liturgical role of the synagogue in addressing the religious, social and political needs of various communities in the first century. The study indicates that Luke depicts Jesus and Paul as using various public synagogues as part of a deliberate strategy for transforming their ministries to serve the needs of the poor and marginalised.

Supervisor: Prof MJ Nel

NAGRAADSE KWALIFIKASIES | POSTGRADUATE QUALIFICATIONS

**Magister in die Teologie
Master of Theology**

Beukes, Hendrik (Practical Theology: Ministry)
Beukes, Petrus Alexander (Missiology) (*cum laude*)
Cho, Jeung Un (New Testament) (*cum laude*)
Garande, Tatenda (Old Testament)
Grobbelaar, Jan Gysbert (Practical Theology)
Hasiso, Elias Assefa (New Testament)
Jacobs, Jacques Warrant (Systematic Theology)
Jeon, Sunmin (New Testament)
Joubert, Andre Walters (Practical Theology: Ministry)
Kelly, Angus (Systematic Theology) (*cum laude*)
Lee, Dong Joo (Practical Theology)
Maseti, Sizwe (Old Testament) (*cum laude*)
Mlambo, Ntandoyenkosi Nomkhosi Nokuphiwa (Church history and church polity) (*cum laude*)
Ochel, Pia Franziska (Practical Theology)
Roberths, Tamlynn Jane (Practical Theology) (*cum laude*)
Roelfse, Benjamin Charles (Practical Theology: Ministry)
Saaiman, Granville Monrico (Systematic Theology) (*cum laude*)
Scheepers, John Peter (Missiology) (*cum laude*)
Seo, Ban-Seok (Practical Theology) (*cum laude*)
Thabede, Hellen Nomusa (Practical Theology)
Theron, Dawid Francois (Practical Theology: Ministry) (*cum laude*)
Thyssen, Ashwin (Systematic Theology) (*cum laude*)
Witthoft, Ewald (Practical Theology: Ministry) (*cum laude*)

**Magister Divinitatis
Master of Divinity**

De Klerk, Stefan (Ministry) (*cum laude*)
Groenewald, Hanli (Ministry)
Hutton, Lionel Harold (Ministry) (*cum laude*)
Jacobs-Smith, Michelle Wilma (Ministry)
Liebenberg, Karlie (Ministry) (*cum laude*)
Nel, Theo Cannon (Ministry)

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

Bwosh, Samuel Deme
Gelderblom, Ilze Annique
Premananthan, Sean Allister
Yende, Keletso (*cum laude*)

**Nagraadse Diploma in Teologie in Christelike Bediening
Postgraduate Diploma in Theology in Christian Ministry**

Hendriks, Nathania
Niehaus, Heinrich Frederick

**Nagraadse Diploma in Teologie in Godsdiens en Kultuur
Postgraduate Diploma in Theology in Religion and Culture**

Vapi, John Tembaletu

VOORGRAADSE KWALIFIKASIES | UNDERGRADUATE QUALIFICATIONS

**Baccalaureus in die Teologie
Bachelor of Theology**

Damon, Loren Louise
Farao, Lance Pierce
Kirchner, Kelsey-Anne
Pretorius, Leticia Macruth
Spandiel, Octavia Avesca

**Baccalaureus Divinitatis
Bachelor of Divinity**

Linderoth, Rachel Susan
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Soganga, Bulelwa Jacquelyn
Van der Westhuizen, Ashley John
Van Niekerk, Cornelis Albertus Josef
Windvogel, Pieter André



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