



UNIVERSITY OF THE  
WITWATERSRAND,  
JOHANNESBURG

100<sup>1922</sup><sub>2022</sub>

PhD  
**GRADUATION CEREMONY**

The Great Hall  
Monday, 18 July 2022 | 09:30

*Celebrating 100 Years of Wits*





**Examinations and Graduation Office**

2nd Floor, Room 2021, Solomon Mahlangu House

Tel: 011 717 1280/1

[www.wits.ac.za/graduations](http://www.wits.ac.za/graduations)

# A MESSAGE TO GRADUATES FROM THE CHANCELLOR



A hearty congratulations to the inimitable class of 2022!

Your graduation occurs in a special year for the University of the Witwatersrand, the Centenary year. But it also occurs amid global and local challenges. You had to overcome so many obstacles, especially, the worst pandemic in a century, COVID-19. Some of you lost loved ones to the pandemic. We pay our respects to them and express our gratitude to your families, friends, and academic staff for their support during a very difficult time for humankind globally. Your hard work to reach the pinnacle of your academic achievement, under such immense challenges, is a true reflection of your resilience and commitment. As a country we look up to your exemplary leadership of self to lead us out of inequality, poverty, and hopelessness.

Despite the challenges encountered over the past two years, scientists from South Africa have shown our best side, excellence, and integrity. We expect no less from you. The COVID-19 pandemic has reminded us of the importance of collaboration across disciplines and across sectors. It is the weakest amongst us that determine our strength as a nation. The highly educated have the responsibility to enlighten and fight for social justice for the marginalised, for the good of humankind. The COVID-19 pandemic reminded us how the global life systems are inextricably linked, with the health and social crises affecting the marginalised disproportionately, globally.

As you venture into the world, take time to expand the depth and breath of your knowledge. Read outside your specialisation, engage with people outside your comfort zone. Understand the plight of people less fortunate than yourself. Leaders who leave footprints worth emulating, are not the brightest but those who take time to learn from others, who develop their communication skills across the board, who use what they know and what they have, to make the world a better place. Those leaders do this consistently with Integrity, always. May you be those leaders!

**Dr Judy Dlamini**  
Chancellor  
Wits University

**CONGRATULATIONS! HALALA! GO LEAD SOUTH AFRICA TO GREATNESS!**

*Wits for Good* is about using all human capacity to find Innovative solutions to our challenges, with integrity!

# A MESSAGE TO GRADUATES FROM THE VICE-CHANCELLOR AND PRINCIPAL



**Dear Wits Graduate,**

Congratulations on successfully completing your academic programme at Wits, the premier University in Africa.

You are now a member of an elite group of graduates of this august institution. Our more than 200,000 alumni are at the cutting edge of excellence, both locally and internationally in business, the public sector, the academy, and in civil society. Today, you become a member of this illustrious community.

Over the past 100 years, Wits has grown into one of the leading universities on the continent and a globally respected institution for its teaching and learning, knowledge creation and generation, and social impact. It has shaped the lives of many and changed society, for good. You are now an integral part of this proud and enduring legacy. Here at Wits we actively pursue excellence and societal relevance in everything we do. From the abstract to the practical, our focus is on creating a space for the best thought, knowledge and expertise to be unearthed and nurtured.

Wits is renowned for its intellectual leadership and for nurturing critical thinkers, creative innovators, problem-posers, and problem-solvers. We have strived to match your ambition and drive to overcome the challenges thrown our way by the pandemic. Together we have reached the crest of the hill and proven, once again that excellence is achievable, even in times of uncertainty and adversity.

Your success has furthered our commitment to equipping the next generation of leaders with the skills and determination that you will need to find innovative and sustainable solutions to the pressing problems of the 21st Century.

As a Wits graduate, you had access to an exceptional educational experience. You have been exposed to a world-class academic and research programme and a vibrant community that makes you a true global citizen. You have been part of an institution that generates cutting-edge knowledge and innovation for South Africa and the world. It is now time for you to step into the world and use that experience, for good. We know that you will enter the next stage of your journey with the determination to build a better society tomorrow. I want to encourage you to remain a part of the Wits family by participating in our alumni programme and by further advancing the reputation of your alma mater.

Best wishes for the next steps of your journey and congratulations on being such a big part of the history of this illustrious institution.

**Professor Zebulon Vilakazi**  
Vice-Chancellor and Principal  
Wits University

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# MESSAGE FROM

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## THE PRESIDENT OF CONVOCATION



**Dear Wits Graduate,**

There are a few defining moments in life – and it is without doubt that a PhD graduation is one of them!

You are now a PhD graduate from one of the top universities on the African continent. You enter into a world filled with many challenges, but a world that is also filled with limitless possibilities. May you meet all the challenges and opportunities that await you with pride, drive, passion, innovation, social-conscience and positive-purpose.

While some of you are first time graduates of this university and others have already obtained degrees from Wits – this PhD cohort are united forever in association with a special group of individuals: The Convocation of Wits University. Convocation represents all the degreed graduates of Wits and forms a vital link between the University and the global community in which it operates. Membership to Convocation is free and serves as an official channel, allowing you, the members, to convey to the University management your views about the University. This membership comes with several unique privileges, which include nominating the Chancellor of the University. The Convocation Executive has two members on the Wits Council (the governing body of the University) and maintains other regular contact with the University to ensure the voice of the Convocation is represented at the highest levels of The University.

There are approximately 250 000 Wits alumni worldwide. The distinction of our university is important to the prestige of our collective qualifications. We, therefore, call upon you to nurture and enhance the value of your degree by promoting Wits' image, preserving our values, and contributing towards our ongoing development, ensuring that we grow in stature as a globally competitive, proudly South African institution of higher learning.

Please engage with us via our numerous social media channels and keep connected with us so you can access career support, receive invitations to events and reunions and have sight of all the latest news about Wits and prominent Witsies: [www.wits.ac.za/alumni/updateyourdetails/](http://www.wits.ac.za/alumni/updateyourdetails/)

I would like to extend a warm welcome to you – you are now a #Witsie4Life!

**Stacey-Lee Bolon**

President of Convocation  
Wits University



**Convocation** is a statutory body that includes all graduates of the University. Convocation is the largest constituency of the University (since the founding of the University in 1922, graduates number over 200 000). Its statutory mandate is to "... discuss and state its opinion upon any matters relating to the University including matters referred to it by the Council" and allows for the views of graduates to be represented at the highest levels of governance of the University.

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# ORDER OF PROCEDURE

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**Monday, 18 JULY 2022 | 09:30**

The audience will rise as the academic procession enters the hall and will remain standing until the Chancellor is in place

The Chancellor will constitute the congregation

The Chancellor will welcome the graduands

Address to the congregation

Conferment of degrees

The President of Convocation will address the graduates

The Chancellor will dissolve the congregation

The audience will stand while Ihele is played

Members of the audience are requested to stand while the academic procession leaves the hall and not to leave the hall before the end of the ceremony.

## **IMPORTANT NOTICE**

In the event of load-shedding or power cuts, the Great Hall may become totally dark until the generator comes into operation.

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# FACULTY OF

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## COMMERCE, LAW AND MANAGEMENT

**ACTING DEAN: PROFESSOR J COHEN**  
BCom Hons PhD (Witwatersrand)

### Doctor of Philosophy

**ADJEI, Abigail Naa Korkor**

*Graduate School of Business Administration*

**THESIS:** Policy uncertainty, economic distance and macroeconomic variables in developing economies

This thesis investigates the relationship between economic policy uncertainty and macroeconomic variables through three themes: Interdependence, Distance and Spillover Analysis. The thesis discovered strong evidence of interdependence and causality between economic policy uncertainty and macroeconomic variables. The findings also show a significant relationship between distance and economic policy uncertainty. The findings from this study shows evidence of spillover and causal spillover between EPU and macroeconomic variables within each EME.

Supervisor: Dr G Tweneboah

**AGUEBOR, Ebe**

*Law*

**THESIS:** Developing and interpreting the rights to dignity and equality to protect and extend the rights of sexual minorities in Nigeria

This thesis analyses meanings given to the rights to dignity and equality/non-discrimination under the Nigerian Constitution, its case law and academic jurisprudence; and the applications of these rights in contexts such as Canada, South Africa, India, the ACHPR, ECHR, ICCPR and the UDHR. It establishes significant agreement between these foreign concepts and concepts under Nigerian law, which both affirm rights for sexual minorities; and proposes that these inclusive interpretations/approaches, should be used by the courts to protect sexual minorities.

Supervisor: Professor E Bonthuys

**ASANTE-DARKO, Disraeli**

*Graduate School of Business Administration*

**THESIS:** Sustainable supply chain management and firm performance in Ghana: examining the mediating and moderating factors

The study investigated how Supply Chain Integration, Firm Capabilities, Business Environment Uncertainty and Operational Competitiveness accounted for the relationship between Sustainable Supply Chain Management (SSCM) and firm performance. Using responses from 455 firms and variance-based structural equation modelling, the SSCM-firm performance relationship was mediated by firm capabilities and supply chain integration and moderated by environmental uncertainty and operational competitiveness. The study clarifies the process and mechanisms impacting sustainability practices and contributes to the regulation of SSCM practices in developing economies.

Supervisor: Dr F Saruchera

**CASSIM, Aalia**

*Economics*

**THESIS:** Essays on the temporary employment services sector in South Africa: an analysis using administrative data

For a thesis examining the temporary employment services, or labour broker, sector in South Africa. Using novel administrative data based on tax records, the thesis analysed the wages and working conditions in the sector, as well as the implications of new legislation meant to strengthen workers' rights in this sector.

Supervisor: Professor D Casale

**COETZEE, Cassius**

*Marketing*

**THESIS:** Intrinsic and extrinsic motivators of online engagement amongst LGBT online cosmetic brand communities, and the effect it has on brand equity

The 'pink dollar' market is of fundamental importance to brands and engaging with these consumers on digital platforms, can provide significant benefits to companies. This study focused on the impact of intrinsic and extrinsic motivators on online engagement amongst LGBT consumers within the cosmetics industry. By means of an empirical study, a large sample of LGBT consumers were surveyed and the results indicated that cosmetic companies should utilise Online Brand Communities (OBC) as a means to obtain stronger brand equity.

Supervisors: Dr M Venter De Villiers and Dr T Chuchu

**DITLHAKE, Kefilwe Johanna**

*Wits School of Governance*

**THESIS:** Complexities of the professionalization process and ethics of community development in South Africa

The purpose of this study was to examine the professionalisation of the community development sector. The findings are that professionalisation complexities are connected, inter alia, to the history of the multidisciplinary nature of community development practice, lack of engagement and broader consultative processes, professional identity issues, and a lack of a regulatory framework.

Supervisor: Professor P Pillay

**GENGA, Cheryl Akinyi**

*Graduate School of Business Administration*

**THESIS:** An intersectionality of race and ethnicity: the glass ceiling in the banking sector in Kenya and South Africa

This research provides an understanding of the intersectionality of race, ethnicity, and career advancement of Black African women in the Kenyan and South African banking sector. Drawing on rich data from 40 semi-structured interviews the research analyses the diversity of Black African women in banking, describes the obstacles they face and identifies the reasons why some women have cracked the glass ceiling. The research concludes in providing recommendations to stakeholders on how to overcome these obstacles.

Supervisor: Dr C Maier

**GENGA, Shirley Anne**

*Law*

**THESIS:** Legal responses to employment discrimination on the basis of psychosocial disabilities: Kenya's and South Africa's compliance with the convention on the Rights of Persons with Disabilities (CRPD)

This study critically evaluates what the right to live independently and, in the community, looks like for persons with psychosocial disabilities, and why this right is particularly important. Specifically, it discusses the link between the right to work and employment, and the right to live independently and in the community. Further, it then examines Kenyan law to determine the extent with which it protects the right of

persons with psychosocial conditions to live independently in the community.  
Supervisor: Dr M Du Plessis

**KADER, Aziez** *Graduate School of Business Administration*

**THESIS:** A behavioural strategy perspective of selected psychological triggers on strategic decision-making

The research employed the psychological foundations of behavioral strategy to investigate the role of values in strategic decision-making in an unsuccessful investment venture. The study adopted sense-making and goal-framing theories using a phenomenological methodology to explore behavioral decisions in context. The thesis constructed a theoretical framework to understand the motivational dynamics of values, cognitive and emotional salience in strategic attention, and behavioral strategy. The thesis adds to behavioural strategy by establishing connections between congruent or conflicting values, emotional and cognitive salience, and strategic attention.

Supervisors: Professor T Carmichael and Dr C van der Hoven

**KAMAU, Simon Muhia** *Graduate School of Business Administration*

**THESIS:** Banking Industry response to competition from the financial Inclusion paradigm in Africa

The study examines the banking industry's response to competition from Micro-Finance Institutions (MFIs) - reflective of the financial inclusion paradigm - in Africa. The study also analyzed the implications of the response on the cost efficiency, asset portfolio risk, and social outreach (performance) of the banking industry. The findings highlight the importance of competition in driving the financial inclusion agenda in Africa.

Supervisor: Professor K Ojah

**MACKETT, Odile** *Wits School of Governance*

**THESIS:** Unpaid reproductive labour and decent work in the South African labour market

This study investigated whether the decent work agenda of the International Labour Organisation is conceptualised in a way that reflects a commitment to real gender equality in the labour market. The results indicate that the more time an employed woman spent on unpaid reproductive labour, the worse the quality of her paid job.

Supervisor: Professor P Pillay

**MAGAGULA, Sibusiso Vusi** *Graduate School of Business Administration*

**THESIS:** The impact of foreign ownership in emerging markets' banking system: a case of BRICS

This thesis examines the impact of foreign bank ownership in BRICS. The results show that foreign-owned banks contribute significantly to BRICS financial soundness, albeit procyclically. Moreover, the domestic banks are the backbone of BRICS' banking system. Foreign ownership's presence in BRICS improves banks' performance and efficiency. However, investors need to be aware of these benefits' financial risks (earnings', credit, and systemic risks). Furthermore, bank ownership weakens the fiscal and monetary policy transmission via the lending channel.

Supervisor: Professor T Mokoaleli-Mokoteli

**MAKWATI, Tshepang Edwin** *Law*

**THESIS:** An analysis of South Africa's framework for the domestic implementation of International Human Rights standards against torture

The candidate undertakes an in-depth analysis of South Africa's compliance with its

obligations emanating from the international law prohibition of torture and other forms of ill-treatment. His analysis outlines the international human rights standards and then focuses on juxtaposing the legal framework and the institutional framework against the international standards. Using the findings, the thesis proposes practical measures that can be implemented domestically to enhance South Africa's compliance with its international obligations.

Supervisor: Professor M Swart

**MALINDINI**, Kholiswa

*Wits School of Governance*

*THESIS:* Impact analysis of institutional quality on Foreign Direct Investment inflows into the SADC region

This study examines the effects of institutional quality on FDI flows; the impact of financial development on FDI institutional quality; and whether SADC country income levels matter for FDI inflows. The major finding is that weak institutional quality is a critical factor together with the absence of enforcement mechanisms to protect foreign investor rights.

Supervisor: Professor P Pillay

**MANDUNA**, Kennedy

*Wits School of Governance*

*THESIS:* Overpromising and under-delivering: Zimbabwe's extractive industry indigenisation and uneven development

Uneven development has characterised Zimbabwe's political economy landscape from the colonial era to the present. In parallel, foreign-owned corporations and non-indigenous citizens have commanded the economy throughout this period. Zimbabwe's indigenisation programme is a strategic policy choice responding directly to this widespread unevenness. This study examined the structural and contextual factors accounting for extractive industry indigenisation underdelivering upon implementation. Findings show that extractive industry indigenisation produced largely disempowering outcomes for the indigenous majority and communities involved.

Supervisor: Professor E McCandless

**MASHELE**, Winsome

*Graduate School of Business Administration*

*THESIS:* The glass cliff: exploring the dynamics around the appointment of women to precarious leadership positions in corporate South Africa

Drawing on role congruity theory, this study investigated whether men and women are differentially selected to corporate leadership positions in South Africa. Set in an interpretivist constructive paradigm, gendered history, and stereotypes create the glass cliff for women. Balancing gender roles should be the focus of public and social policy.

Supervisor: Professor P Alagidede

**MBATHA**, Vuyile Cynthia

*Graduate School of Business Administration*

*THESIS:* Leadership development impact evaluation approaches

The thesis reports on a mixed methods research study, which investigated the approaches, used in the evaluation of the impact of the leadership development initiatives within the context of financial services corporate organisations. The study identifies a gap in the holistic impact evaluation and created new knowledge in the development of a "Leadership Impact Onion Evaluation Framework".

Supervisor: Dr M Matshabaphala

**MOFOKENG**, Teboho Mantebele

*Marketing*

**THESIS:** The impact of green practices on supply chain performance in the textile and clothing industry in South Africa

Obtaining a green culture is crucial for businesses and contribute to the South African economy. However, due to the competitive nature of the clothing and textile industry, companies are reluctant to implement green practices into their supply chain processes. This study investigated the impact of green marketing and green logistics on supply chain performance, while mediated by operational performance and environmental performance. The results provide valuable insight to manufacturing firms on green logistics and its' importance on improving supply chain performance. Supervisors: Professor C Mafini and Dr M Venter De Villiers

**MOODLEY**, Sheila

*Graduate School of Business Administration*

**THESIS:** Management style and employee engagement in blue collar workers

This doctorate makes an important contribution to the blue-collar environment in South Africa by focusing on the impact of management style on employee engagement. Drawing on rich empirical data, the research scrutinises the interface of management style and blue-collar worker engagement against specific South African historical and socio-political complexities. The research presents valuable insights on the South African blue-collar environment and contributes a management model for engaging blue collar workers in the performance of their work.

Supervisor: Dr C Maier

**MOOKETSANE**, Keneilwe Sadie Sheilah

*Wits School of Governance*

**THESIS:** Pathways to Power: narratives of women in Political Leadership in Botswana

This thesis contributes to academic discourse on gender and politics by offering a nuanced feminist approach to conceptualising political power and leadership in Botswana, through a deep look at narratives and experiences that shape women's pathways to power. While women's wings in political structures are expected to facilitate women's pathways to political positions, the thesis shows that these are insignificant. Instead, open electoral contests and special nominations are the two main pathways through which women gain political leadership positions.

Supervisor: Dr C Abrahams

**MOTHULOE**, Vincent Barney

*Business Science*

**THESIS:** Differentiated workforce on strategy implementation within the insurance industry: a strategy as practice approach

This study explores the roles of the differentiated workforce in strategy making and in particular, strategy implementation in two insurance organisations in South Africa. The data revealed that strategy formulation and implementation are dispersed throughout the entire organisation, and that organisational context may affect the differentiated workforce's strategy implementation through particular barriers and challenges. The data also show that the roles of the differentiated workforce serve as a bridge between the various strata, and provide a meaning-making platform for the entire organisation.

Supervisor: Professor O Samuel

**NEL**, Karen

*Graduate School of Business Administration*

**THESIS:** Combining complexity leadership with operational systems and structures for adaptability in South African private hospitals

The candidate critically examined whether private hospitals in South Africa were ready for adaptability, considering complexity leadership and operational systems and

structures. This mixed methods study confirmed that private healthcare was indeed not positioned for adaptability. The leadership approaches during the COVID-19 pandemic further re-affirmed this. This study recommends aggressive industry change, a framework for adaptability, collaboration, and development programs to create an adaptive space. This study is significant for private and public hospitals in South Africa and the broader African continent.

Supervisor: Professor M Qobo

**NHLABATHI**, Mthobisi Patric

*Marketing*

*THESIS:* Predictors of rental preference among Generation Y: a case of Sandton, South Africa

The study examined the influence of social media and branding on Millennials' rental preference towards a premium residential area in South Africa. Using the technology acceptance model, theory of planned behaviour and consumer-based brand equity theories, the study found that social media marketing and brand perceptions influence tenant preference. The study highlights important lessons for real estate marketers.

Supervisors: Dr F Mgiba and Dr N Ligaraba

**NTINI**, Zungezile

*Business Science*

*THESIS:* Relationship quality and exhibition brand preference as antecedents of future exhibition intention and performance in Zimbabwe

Globally, the exhibition industry faces a decline in participation from vendors, and relationship marketing plays a major role in restoring this industry. This study investigated the role relationship quality between exhibition vendors in a business-to-business environment. By means of an empirical study, a mixed method approach was used and the results revealed that relationship quality between exhibition vendors is of fundamental importance for the long-term success of the exhibition industry.

Supervisor: Dr M Venter De Villiers

**NTWANA**, Bukiwe Baphumelele

*Wits School of Governance*

*THESIS:* Gender-based inequalities in access to water and sanitation in South Africa: case study of two informal settlements

This comparative research project uses two informal settlements to explore how the institutional and infrastructural arrangements impact women's water and sanitation access. The research reveals that the institutional and infrastructural arrangements, within which water and sanitation services are accessed, create socially isolated forms of urban lives led by marginalization and instability in relation to access to such services for women. Thus, this research contributes to broader understandings of structural gender-based inequalities in terms of water and sanitation in our society.

Supervisor: Dr A Wafer

**OSEI**, Dennis Boahene

*Graduate School of Business Administration*

*THESIS:* Studies on philanthropy and impact investment in Ghana

The thesis is centered on three essays which provides evidence to explain the complementary role and distinctive determinants of formal and informal charitable giving, practices of corporate foundation giving, and impact investment in Ghana. The insights based on quantitative and qualitative approaches are instructive, and enliven the best way for practitioners and policymakers to harness the potential of the philanthropic and impact investment angles to resource mobilisation for social and economic development.

Supervisor: Professor P Alagidede

**OSSAI**, Vincent Odogwu

*Wits School of Governance*

*THESIS:* Strengthening Nigeria's Security Sector Governance to effectively control drug trafficking and terrorism

This research explored the means of strengthening Nigeria's Security Sector Governance to effectively counter terrorism and its facilitation by terrorism financing in view of the observation that its capacity to effectively achieve this objective is deficient. Enhancement of the sector's relevant reform requirements were therefore advocated including its democratic oversight, human rights, anti-corruption and good governance standard. Others include: improved human resources, budgetary and equipment supports; better intelligence management as well as efficient policy and legal supports.

Supervisors: Professor A Van Nieuwkerk and Professor G Cawthra

**OUMA**, Wycliffe Nduga

*Graduate School of Business Administration*

*THESIS:* Towards framework for asset pricing in developing equity markets

The need to determine risk-return trade-offs is an important question for many players in capital markets. We addressed this question by attempting to determine the drivers of returns in 20 developing equity markets. Risk factors were identified using a triangulation approach involving Asymptotic PCA and Canonical Correlation analysis. Empirical asset pricing test employed Fama-MacBeth, GMM and Double Selection LASSO. Market (MKT), value (HML), momentum (UMD), profitability (RMW) factors and market wide volatility (VOL) were found priced in the returns.

Supervisor: Professor O Kodongo

**SHAW**, Douglas

*Law*

*THESIS:* The constitutionality of sales in execution for less than market value and where alternatives are available

This thesis explores the constitutionality of the current legal regime in which a person's home is sold if the person defaults on their mortgage bond. Notwithstanding significant development for to align the regime with the Constitution, the thesis highlights that there are two remaining legal problems. The first is that there is no guarantee of a reserve price being set that is close to the market price. The second is that there is no detailed law determining when the sale should not go ahead.

Supervisor: Professor J Dugard

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# FACULTY OF

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# ENGINEERING AND THE BUILT ENVIRONMENT

## DEAN: PROFESSOR T MAJOZI

BScEng(UND) MScEng(UND) PhD (UMIST) CEng PrEng FIChemE FAAS MASSAf FWISA FSAAE

### Doctor of Philosophy

**AFINOWI**, Taiwo Adekanmi *School of Architecture and Planning*

*THESIS:* The intersection between global urban agendas and practice at local levels in housing and human settlements, a case of Lagos.

This thesis examines the efficacy, intersections and contradictions of the global urban agendas as it relates to localised multi-level governance in the cities of the South. Key finding is that global agendas are not well received and implemented at the local levels due to identified socio-political peculiarities in urban practice, political mandate, and mediating forces not accounted for during deliberations.

Supervisor: Professor A Karam

**ANANE**, George Kwadwo *School of Architecture and Planning*

*THESIS:* The relationship between land administration systems and spatial change in the peri-urban areas in Ghana. The case of Kumasi and Sunyani.

This thesis examines the spatial transformation resulting from peri-urbanisation in two Ghanaian towns, and the roles of statutory and traditional authorities in the governance thereof. Through a case study method, the thesis finds that key actors form pragmatic alliances that concentrate on short-term gains at the expense of long-term socio-environmental and infrastructural considerations.

Supervisors: Professor M Huchzermeyer, Professor P Misselwitz and Dr D Inkoom

**BURLA**, Swathi *School of Chemical and Metallurgical Engineering*

*THESIS:* Development of mixed matrix membrane for desulfurization of sulfur rich petroleum stream

The study developed a mixed matrix membrane embedded with Hexagonal Boron Nitride for the desulfurization of petroleum stream. The results showed great potential for sulphur removal. She established the mechanism model for future design of the desulfurization unit operation. She found that the membrane technology is an efficient and economical alternative to traditional hydrodesulphurization methods

Supervisors: Professor D Nkazi and Dr M Maubane-Nkadameng

**HARTMANN**, Dieter *School of Mechanical, Industrial and Aeronautical Engineering*

*THESIS:* Demand management in healthcare service delivery: the case for failure demand

This thesis gives further understanding of demand in healthcare from a systems viewpoint. A demand modularisation model extends the concept of failure demand and introduces, for the first time, the important contributing factors of escalation demand and false demand. This provides new insight into the complexities of demand in healthcare, allowing the possibility of improvements in cost and service.

Supervisors: Dr B Emwanu and Professor J Bicheno

**KOLA, Katlego Violet** *School of Construction Economics and Management*  
*THESIS: Volatility interconnectedness among Real Estate and other assets in the BRICS Countries*

The candidate studied volatility interconnectedness of the capital markets indices of the BRICS countries. Fundamentally, she created volatility portfolio, inverted the capitalized GARCH and disentangled structural breaks of the time series using integral transforms including their inverse functions.

Supervisor: Dr T Sebehela

**MAKHATHINI, Thobeka Pearl** *School of Chemical and Metallurgical Engineering*  
*THESIS: Application of artificial neural network for prediction of sulfidogenic fluidised bed reactor performance and optimisation for the co-treatment of acid -mine drainage with liquid pharmaceutical waste*

This study established a novel approach for treating acid mine drainage using a fluidized-bed reactor in conjunction with pharmaceutical-rich effluent. Additionally, the co-treatment with nano scale zero-valent iron was improved to allow for the analysis of heavy metals that had not been sufficiently removed in earlier studies, the study developed an easily deployable process design model for biological treatment of acid mine drainage.

Supervisors: Professor L Mulopo and Professor B Bakare

**MAVHENGERE, Patience** *School of Chemical and Metallurgical Engineering*  
*THESIS: The effects of Wet Supercritical CO<sub>2</sub> treatment on the storage potential of Zululand (South Africa) sandstones.*

The research project was conducted to gain insight into the geological storage of CO<sub>2</sub> gas in South Africa with a focus on sandstone samples of the Zululand Basin. An investigation of mineral and microstructural changes of sandstone samples during wet supercritical CO<sub>2</sub> gas treatment for geological CO<sub>2</sub> sequestration was piloted. Changes in the mineralogy as well at microstructure level were observed. The study presents a novel investigation of the changes expected to take place during CO<sub>2</sub> injection in sandstone basins. The documented findings provide a crucial foundation for the prediction of long-term CO<sub>2</sub> sequestration effects in the Zululand Basin of South Africa.

Supervisors: Professor N Wagner and Dr N Malumbazo

**MODIBA, Mamokete Devon** *School of Architecture and Planning*  
*THESIS: The role and influence of street trader leaders in urban governance.*

This PhD thesis investigates the role and influence of street trader leaders in the everyday management of street trade, in Johannesburg, Tshwane and Ekurhuleni in South Africa. It analyses this role in relation to the local urban histories and configurations, to the structure of street trader organisations, and to the relationship between leaders and the state.

Supervisors: Professor C Benit-Gbaffou and Dr R Ballard

**MURAHWA, Brian** *School of Architecture and Planning*  
*THESIS: Migrant Pentecostal Churches and the Transformation of Urban Space in Johannesburg.*

The candidate relies on ethnography conducted in Hillbrow, Johannesburg, to examine the intersections of pentecostal geographies with spatial, erotic, economic, and legal geographies. He successfully argues that despite being peripheralised in mainstream urban studies theory and literature, Pentecostalism is a transformative signifier in the socio-spatial configuration of African cities such as Johannesburg.

Supervisors: Dr M Rubin and Dr O Katsaura

**MUSHONGERA**, Darlington

*School of Architecture and Planning*

**THESIS:** Who governs Johannesburg water? An actor-network reading of water services governance in the City of Johannesburg (2000 - 2018).

This study examines how the City of Johannesburg governs Johannesburg Water, its water utility. In pursuance of both efficiency and equity objectives in water delivery, there now exists a large number of diverse actants exercising oversight on the utility, such that the system of reporting has faltered and the City's ability to govern water services is compromised.

Supervisors: Professor C Benit-Gbaffou and Dr R Ballard

**NGUNJIRI**, Irene Wanjiru

*School of Architecture and Planning*

**THESIS:** Water governance in urban informal settlements: an infrastructure lens perspective on Mukuru, Nairobi and Kya Sands, Johannesburg.

Intermittencies in water supply for informal settlements and intricate webs of governance over the last mile motivated the comparative study of Mukuru, Nairobi and Kya Sands, Johannesburg based on materials, people and knowledge as infrastructure lens. Key finding is that people-as-infrastructure and subversion of normative modes of governance are the salient manoeuvres actors employ to negotiate water access.

Supervisors: Dr M Rubin and Professor D Irurah

**NHLEKO**, Adeodatus Sihesenkosi

*School of Mining Engineering*

**THESIS:** A dual interchange algorithm for three-dimensional stope boundary optimisation for underground mines

The optimisation of three-dimensional stope layouts is computationally complex. To address this challenge, the candidate developed a metaheuristic dual-interchange algorithm to optimise three-dimensional stope layouts. The dual-interchange algorithm outperformed the commercial MSO software when applied to a case study mineral deposit by producing superior stope layout economic values that were higher than the MSO solutions.

Supervisor: Professor C Musingwini

**PANTANOWITZ**, Adam

*School of Electrical and Information Engineering*

**THESIS:** Addressing measurement uncertainty in laboratory medicine

Measurements in medical laboratories are subject to error that affects patient management. In this study, real-world blood test data was used to determine correlations and metadata related to patient triage and ward location. From this, a framework to detect both random and systematic error was developed, allowing for reliable, early error detection, for enhanced patient outcomes and cost-saving.

Supervisors: Professor D Rubin and Professor B Rosman

**SAID**, Ebrahim Yassir

*School of Electrical and Information Engineering*

**THESIS:** A systems architecture for Internet of Things (IoT) connected-edge runtime configuration

A standards-based systems architecture method is proposed that covers the systems, subsystems, and components employed at runtime at the connected edge of the Internet of Things (IoT). A key contribution of this work lies in recognising that not all IoT deployments should have a fixed run-time configuration, and the thesis establishes and validates a comprehensive framework which empowers a more dynamic edge-node and, as a consequence, presents a significant advantage to the overall system.

Supervisor: Associate Professor K Nixon

**SHEMI, Alan**

*School of Chemical and Metallurgical Engineering*

**THESIS:** Recycling of Tungsten carbide-based scrap metal: selective dissolution of the cobalt binder phase and recovery of valuable constituents using a complexing agent-aided acid leach process

The candidate investigated the recycling of cemented tungsten carbide hardmetal scrap for the recovery of critical metals; tungsten and cobalt. The candidate developed a hydrometallurgical process wherein the cobalt which, forms the binder phase of the cemented carbide is selectively extracted, and recovered as metallic cobalt whilst tungsten is recovered as a monocarbide powder phase.

Supervisors: Professor S Ndlovu and Professor N Sacks

**SHIMAPONDA-NAWA, Mulundumina**

*School of Electrical and Information Engineering*

**THESIS:** Permutation coded multiple access and MIMO techniques for hybrid powerline and visible light communication

Internet of things presents an opportunity for hybrid networks to achieve the reliable, ubiquitous, and pervasive connectivity. This work proposes and demonstrates reliable and low-complexity indoor coded multiple access and multiple-input multiple-output techniques, i.e., multiple access using permutation codes, Hungarian and Murty's algorithm based soft-decision decoding, encoder adaptation, time-diversity Hermitian symmetry for cost-effective hybrid powerline and visible light communication systems, with practical channel considerations.

Supervisor: Professor L Cheng

**STEPHENSON, Ruth Jane**

*School of Chemical and Metallurgical Engineering*

**THESIS:** Developing an advanced reactor model for complex, non-ideal reactors

The research focused on understanding fluid flow through biological wastewater treatment systems, with a specific focus on constructed wetlands. The aim was to quantify the effect that fluid flow has on reaction time and use the information, in combination with a biokinetic model, to inform and improve on technology design.

Supervisor: Professor C Sheridan

**ULLAH, Waheed**

*School of Electrical and Information Engineering*

**THESIS:** Symbol flipping decoding of non-binary low density parity check codes

Non-binary LDPC codes are used for correcting errors in information transmitted through a noisy communications channel or for data storage systems. This thesis derives low complexity decoding algorithms that also achieve low latency in decoding LDPC codes. Three schemes based on symbol flipping decoding are derived for binary and higher order modulation and shown to yield good performance at reduced computational complexity and latency.

Supervisors: Professor F Takawira and Professor L Cheng

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# FACULTY OF

## HEALTH SCIENCES

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**DEAN: PROFESSOR SA MADHI**  
MBBCh MMed PhD (Witwatersrand) FCPaed(SA)

### Doctor of Medicine

**GLENCROSS, Deborah Kim**

*THESIS:* Panleucogated (PLG) CD4 HIV Immune Monitoring: a difference by disruption In 1990, projected laboratory costs for a HIV/AIDS programme were set to overwhelm South Africa's health care budget. The researcher development of the novel PanLeucogated CD4 test addressed this problem, substantially reducing costs while additionally simplifying testing and significantly improving test quality. More than 40 million tests have supported HIV patient care since 2004, with an estimated saving that exceeds R8 billion. The work presented in this study outlined the development, scale-up, national implementation and ongoing review of this important diagnostic HIV innovation in South Africa.

Mentor: Professor C Szabo

**RAAL, Frederick Johan**

*THESIS:* Familial Hypercholesterolaemia - Three Decades Of Advances In Therapy Inherited or Familial Hypercholesterolaemia (FH) remains a difficult condition to treat. As a result of markedly elevated cholesterol levels from birth, untreated patients with FH suffer from early heart attack and often premature death. The researcher has played a pivotal role in advancing the treatment for FH both locally and internationally and his thesis describes these advances in therapy over the past three decades.

Supervisor: Professor C Feldman

### Doctor of Philosophy

**ABUKARI, Alhassan Sibdow**

*Nursing Education*

*THESIS:* A model of family-centered care at the Paediatric and Neonatal intensive care setting in Ghana

Family-Centered Care (FCC) has proven difficult to implement in Ghana due to a lack of context-specific models. The researcher used a Multiphase Mixed-Methods with five iterative phases of scoping review, qualitative, quantitative, Delphi, and evaluation studies to develop and validate an FCC model for NICU and PICU practice, which proposes a well-designed NICU and PICU environment, as well as a Trilogic Multidisciplinary Partnership between families, clinicians, and health managers, to promote family-centered care.

Supervisor: Professor S Schmollgruber

**ADEKIYA, Tayo Alex**

*Pharmacy and Pharmacology*

*THESIS:* Targeted, lipoidal nanosystem for the treatment of schistosomiasis

This study provided a concise incursion on the use of various advance approaches to achieve targeted anti-schistosomal therapy, mainly through the use of nano-enabled drug delivery systems. This was achieved by the exploration of the schistosomes tegument as a target.

Supervisors: Professor YE Choonara, Associate Professor P Kumar and Associate Professor PPD Kondia

**ADEOMI, Adeleye Abiodun**

*Public Health*

*THESIS:* The double burden of under- and over-nutrition among school-aged children and adolescents in two Nigerian states

This mixed methods study that documented mothers' perceptions and cultural beliefs about under- and over-weight children and adolescents, established the existence of the double burden of malnutrition, and identified its individual and contextual determinants among school-aged children and adolescents in two Nigerian States.

Supervisors: Professor K Klipstein-Grobusch and Professor A Fatusi

**BASHAR, Muhammad Augie**

*Pharmacology*

*THESIS:* Development of an undergraduate antibiotic stewardship training programme for medical students

The researcher undertook an integrative multimethod study aimed to develop an educational antibiotic stewardship curriculum for medical students in Nigeria and South Africa to address the growing concern of antibiotic resistance. A six-step approach to curriculum development was modified into two phases consisting of a scoping review, survey, summative content analysis of the curricula and a modified Delphi study.

Supervisors: Professor R Van Zyl, Associate Professor P Mclerney and Dr J Miot

**BASU, Jayati Kusari**

*Internal Medicine*

*THESIS:* Evaluation of the effects of a district clinical specialist team on maternal and women's health services in the Ekurhuleni district

This study compared maternal and women's health indicators over a 9 years' period before and after implementation of the district clinical specialist team in the Ekurhuleni district, Gauteng. Interviews of health professionals and district managers were also undertaken. Majority of the indicators particularly maternal mortality showed significant improvement and all participants acknowledged the key role of DCST members for improvement of maternal health services, which reflected on the improvement of the indicators.

Supervisors: Professor A Stewart and Professor J Wing

**BELLO, Hamza**

*Physiology*

*THESIS:* The hypertensive heart in groups of African ancestry in South Africa

The researcher provided the first evidence to show that cardiac damage caused by high blood pressure occurs across the full adult lifespan. Importantly, he demonstrated that in Africa, the use of measures of usual blood pressure measurements or cardiac enlargement have a poor ability to detect these changes. This study suggests that to adequately prevent hypertensive heart failure, intense blood pressure reduction is required from midlife.

Supervisors: Professor A Woodiwiss, Professor G Norton and Dr V Peterson

**CHIDUMWA, Glory**

*Public Health*

*THESIS:* Chronic non-communicable disease multimorbidities in South African adults: evidence from the WHO SAGE study

The thesis utilized advanced biostatistical methodology including LCA, gSEM, and bivariate joint shared component modelling to quantify the prevalence of multimorbidity, identify the co-occurrence and spatial distribution of NCDs, and determine the complex inter-relationships between socio-economic, socio-demographic, behavioural, and environmental factors associated with multimorbidity and depression. This work underscores the need for the healthcare system to focus on managing multiple diseases rather than a vertical approach in managing single diseases, specifically for hypertension and diabetes in South Africa.

Supervisors: Professor L Micklesfield, Dr L Ware and Dr I Maposa

**COMLEY-WHITE, Nicolette Elsa**

*Physiotherapy*

*THESIS:* The physical sequelae of perinatally acquired HIV in adolescents

This mixed methods study aimed to determine the perceived physical challenges for adolescents living with perinatal HIV, to investigate the challenges clinically, and to propose a model of care. This population face significant challenges with height, weight, body mass index, fatigue intensity, manual dexterity, balance and disability levels. The model of care that was developed provides the basis for an understanding of the physical sequelae that they may have and who the key inter-professional healthcare team members should be.

Supervisors: Professor J Potterton and Professor V Ntsiea

**COTTINO, Laura Ann Alice**

*Human Genetics*

*THESIS:* A systematic assessment of the Copy Number Variation (CNV) landscape in ADME genes in Sub-Saharan African populations

The researcher presented an analysis of copy number variation in Sub-Saharan African populations in ADME genes, a class of genes involved in drug metabolism. Repeated or deleted regions - copy number variants - can impact gene behaviour. In this study multiple tools were used to discover and predict the consequence of this important type of genomic diversity. The thesis lays the basis for future work in precision medicine.

Supervisors: Professor S Hazellhurst and Dr V Sahibdeen

**GOMES, Monica Nunes**

*Physiology*

*THESIS:* Effects of *Kigelia Africana*, *Ximenia Caffra* and *Mimusops Zeyheri* seed oils on hormone-independent (MDA-MB-231) and hormone-dependent (MCF-7) breast cancer cells

The researcher investigated whether seed oils of three plants (*Kigelia africana*, *Ximenia caffra* and *Mimusops zeyheri*) that are freely available in Sub-Saharan Africa, can be used to manage breast cancer. This study showed that the seed oils inhibited angiogenesis and promoted cell death of cancer cells suggesting that treatment and complications of thrombosis in cancer patients can be improved through adjuvant dietary supplementation of indigenous plant material. These findings are important for countries with scarce resources and limited treatment options.

Supervisors: Associate Professor E Chivandi and Professor W Daniels

**GONDWE, Wyness Tengeneza**

*Nursing Education*

*THESIS:* Development and pilot testing of a clinical nursing guideline for transition of psychosocial care from the Intensive Care Unit to the ward in Malawi

The researcher studied transition of care for Intensive Care Unit (ICU) patients and their families. This study developed, and pilot tested a nursing clinical guideline for transition

of psychosocial care from ICU to the ward. This thesis demonstrated that effective psychological care, effective communication, adequate discharge preparation and follow up care are key to efficient transition of care. Increased patients and families' engagement in care contributes to reduced anxiety and increased satisfaction with care before, during and after ICU transfer.

Supervisor: Professor S Schmollgruber

**HSU, Hon-Chun**

*Physiology*

*THESIS:* Cardiovascular disease and its associated risk factors in South African chronic kidney disease patients

The researcher reports that in black compared to other Africans with chronic kidney disease, the atherosclerotic cardiovascular disease burden is smaller whereas aortic and diastolic function is more impaired. The researcher further identified consistent differences in treatable risk factors for uremic cardiomyopathy among predialysis, dialysis and renal transplant chronic kidney disease patients. Finally, the researcher showed that the optimal haemoglobin target in dialysis patients may be determined by its contrasting effects on aortic stiffness and pressure pulsatility.

Supervisors: Professor G Norton and Professor P Desein

**MABENA, Sphiwe Nomvula**

*Nursing Education*

*THESIS:* The dynamics of compliance with the national core standards (NCS) for health establishments in South Africa: a case study of two Tertiary Hospitals in Gauteng Province

An exploratory case study using social networking analysis was conducted at two tertiary hospitals in Gauteng - one that achieved the highest level of compliance and one that achieved the lowest level of compliance to understand the dynamics that influence compliance. The methodology included qualitative social networking analysis. Results revealed that the design of the National Core Standards assessment tool is problematic, and structural issues, poor leadership and governance, and inter-stakeholder communication problems within the hospital all impact on compliance.

Supervisors: Dr S Armstrong Dr P Ditlopo

**MACMILLAN, Candice**

*Physiotherapy*

*THESIS:* The development of a screening protocol to determine risk for injury among elite South African rugby players

The first study in this thesis was a systematic review that investigated physical fitness-related injury risk factors among rugby union, rugby league, rugby sevens, and Australian rules football players. Based on the outcomes of the review, the existing Sport Science Lab @ screening tool was modified. Findings of the subsequent Delphi-method survey, reliability, and prospective cohort studies, respectively confirmed the modified tool's face and content validity, interrater and interrater reliability, and association to injury among professional rugby players.

Supervisors: Professor B Olivier and Dr N Benjamin-Damons

**MAPUKATA, Nontsikelelo Olga**

*Public Health*

*THESIS:* Making a rural workforce: exploring the habitus of Health Sciences Students from rural South Africa

Using a Bourdieusian lens, this thesis provided insights about how habitus of rural-origin students constricted and expanded to different aspects of the field. Through a generative habitus, participants experienced a series of shifts transforming in clinical spaces at five levels. As they moderated institutional hierarchies and incidents of racism, their social attributes became active as professional attributes and accrued

benefits to patients. This study highlights inherent values and strengths of rural communities that have often been overlooked in previous studies.

Supervisors: Professor L Manderson and Professor S Reid

**MAYET, Ismail**

*Ophthalmology*

*THESIS:* Botulinum Neurotoxin in the management of essential Infantile esotropia  
Convergence squint in infancy (infantile esotropia) requires surgery which takes a long time in theatre, limiting timely access to correction. The research work compares outcomes between surgery and botulinum injections and which group of children would benefit from botulinum. The main findings are that botulinum injections are comparable to surgery in children younger than 24 months and with a squint deviation of <60 prism dioptres. Additionally, it is more cost effective and takes a fifth of the time in theatre.

Supervisors: Professor M Tikly and Professor S Williams

**MINIGGIO, Hilde Doris**

*Bioethics and Health Law*

*THESIS:* A virtue ethics framework for modern anatomical pathology  
This thesis focused on the development of an empirically informed, nuanced and practicable framework for modern anatomical pathology. This thesis addressed the gaps in current ethics literature by advancing a framework for a neglected practice, offering a tangible way of implementing virtues in the practice and serving as the initial basis for the development of virtuous anatomical pathologists, through virtue-based moral education.

Supervisor: Professor CS Wareham

**MOYANA, Farayi**

*Bioethics and Health Law*

*THESIS:* Towards an ethically justified model for access to Healthcare in Zimbabwe  
This study was conducted in order to provide a possible solution to the myriad of healthcare access problems affecting Zimbabwe. Using an analytic desk-top review methodology, a new ethically justified healthcare model for Zimbabwe is presented, called the Citizen Centred Healthcare Model (CCHM), premised on six fundamental building pillars guaranteeing human rights, enhanced access and citizen-oriented service provision.

Supervisors: Dr J Gardner and Professor C Wareham

**NDIMANDE-KHOZA, Makhosazane Nomhle**

*Wits Reproduction & HIV Institute*

*THESIS:* Exploring the social consequences of cash transfers on adolescent recipients and their relationships

This thesis focused on the psychosocial consequences of cash transfers (CTs) paid directly to adolescents. The findings demonstrated that providing cash to a previously marginalised group improves recipients' psychosocial wellbeing and benefits interpersonal relationships. However, entrenched harmful societal norms, stigma, and inequitable gender roles could potentially undermine the effects of the interventions and impede the targeted impact of CTs. These findings suggested that CTs could lead to a trade-off when given to adolescent boys and girls.

Supervisors: Professor C Macphail and Professor S Delany-Moretlwe

**OUMA, Joseph Douglas Oguti**

*Public Health*

*THESIS:* Monitoring HIV/AIDS Dynamics: an application of real time assessment methods for estimating prevalence at district levels in Uganda

Small administrative areas such as districts or sub-districts often do not have reliable

and up-to-date information for timely decision making due to a lack of resources to conduct appropriate surveys. The researcher examined statistical models that can be applied to generate reliable and timely information for such areas using available data without additional costs. The candidate tested and extended the methods by combining data from multiple sources (i.e. census, surveys and routine service delivery) to estimate HIV prevalence for districts in Uganda.

Supervisors: Professor J Levin, Professor J Valadez and Dr Jeffrey

**OYELADE, Oyeyemi Olajumoke**

*Nursing Education*

**THESIS:** Rehabilitation of individuals with schizophrenia in South-West Nigeria; experiences and practices of clients, families and healthcare practitioners

This study explored 'clients', the patients living with schizophrenia and their families in terms of experiences and expectations of the rehabilitation. It also explored the health care practitioners' practices and expectations in terms of rehabilitation at the two health care settings. This study further established modalities for improving the care of people living with schizophrenia in South-West Nigeria by developing a context-specific practice guide for psychosocial rehabilitation of individuals living with schizophrenia in South-West Nigeria. This study recommends replication of the practice guide in other settings with similar characteristics to South-West Nigeria and adoption with modifications in other settings that are not similar to South-West.

Supervisor: Dr NG Nkosi-Mafutha

**PATSON, Noel Phumisa**

*Public Health*

**THESIS:** Multivariate analysis of drug safety in clinical trials with application to antimalarials in pregnancy in Malawi

Drug safety data collected during premarketing trials provide the basis for drug approval and labelling. Such data usually consist of multiple observation times or varying time to event occurrence, rendering conventional statistical analytical approaches insufficient. This study investigated optimal statistical methods for the analysis of multivariate safety data in clinical trials with application to malaria chemoprevention and treatment during pregnancy trials. New statistical methods were developed, illustrated and evaluated that would improve drug safety profiling in future clinical trials.

Supervisors: Professor T Chirwa, Professor MK Laufer, Professor M Mukaka, Professor L Kazembe and Professor MJC Eijkemans

**PRETORIUS, Deidre**

*Family Medicine*

**THESIS:** Doctors' consultation skills and patients' sexual health in primary health care settings in North West Province

Patients live with sexual challenges due to age, illness, or medication. This grounded theory study videorecorded 151 routine consultations in primary care of patients diagnosed with hypertension and diabetes mellitus. The study, the first of its kind, found doctors failed to take sexual histories, despite high levels of sexual dysfunction amongst the patients. Doctors did not prioritise sexual challenges and showed a lack of patient centeredness. The study suggested that patient, doctor, and health system factors inhibit sexual health.

Supervisors: Dr MG Mlambo and Professor I Couper

**QUINN, Samantha-Lynn**

*Physiotherapy*

**THESIS:** Movement, the musculoskeletal system and lower back pain in young elite male golfers

Longitudinal studies undertaken for this thesis have showed that golfers who developed lower back pain displayed distinct differences compared to their uninjured counterparts in terms of muscle recruitment and kinematics. These findings addressed the second step in the Translating Research into the Injury Prevention Practice model of injury prevention, namely, identifying lower back pain associations.

Supervisors: Professor B Olivier and Associate Professor W McKinon

**RAMOCHA, Lesego Matlhogonolo**

*Clinical Microbiology & Infectious Diseases*

**THESIS:** Epidemiology and pulmonary sequelae in children with human metapneumovirus associated lower respiratory tract infection

This thesis investigated the epidemiology and pulmonary sequelae of human metapneumovirus (hMPV)-associated lower respiratory tract in South African children. The researcher showed that the incidence of hMPV-associated lower respiratory tract hospitalisation was higher in children <6 months compared with older children. This thesis showed that transfer of anti-hMPV neutralising antibodies from mothers to children was significantly lower in women living with HIV-1, but that the ability of such antibodies to protect newborn infants was limited. Lastly, the researcher showed that hMPV LRTI lead to abnormal lung function in the first two years of life.

Supervisors: Professor S Madhi and Dr C Verwey

**SEKHOTHA, Michael Matome**

*Physiology*

**THESIS:** The effects of a street cocktail drug (nyaope) on the opioid signalling system in the rat brain and benefits of moringa oleifera extracts.

The consumption of nyaope, a street drug that consists mainly of heroin, is increasing at an alarming rate in South Africa, yet research into its toxic effects, remains limited. In the current study, we assessed the impact of nyaope on the brain and liver of rats. Our results showed that nyaope negatively affects locomotor activity, mood and cognitive functioning, and is toxic to the liver. Aqueous extracts of Moringa oleifera showed the potential to reverse some of these deleterious effects. This was the first scientific study to assess the effects of nyaope on the brain.

Supervisors: Professor W Daniels and Dr D Muller

**SIMELANE, Ayanda Purity**

*Bioethics and Health Law*

**THESIS:** Ethical obligations that arise from the effects of cultural & religious practices and beliefs on the well-being of children with Autism Spectrum Disorders

The study identified the ethical obligations towards children with Autism Spectrum Disorder that arise from the effects of cultural/religious practices/beliefs on the well-being of such children. It was a bioethical analysis with an empirical (qualitative) component. It found that there are both harms and benefits associated with these practices and beliefs. It recommends better regulation and integration of traditional healing into the care of children with ASD and a recognition of the benefits that would consequently accrue to affected families.

Supervisor: Professor K Behrens

**SUCHARD**, Melinda Shelley

*Haematology & Molecular Medicine*

*THESIS:* Role of alloimmunity in susceptibility to HIV-1 infection

HIV-serodiscordant couples comprise one partner who is highly exposed but remains HIV-uninfected. This study showed that antibodies against class 2 human leucocyte antigens (HLA) were associated with reduced odds of HIV acquisition in serodiscordant couples. These epidemiological data suggests that host-directed antibodies may protect against viral acquisition. While HLA antibodies are not often associated with autoimmunity, they are common in healthy pregnancy. Transplacental transfer of HLA antibodies in healthy mother-infant pairs was further described.

Supervisors: Professor C Tiemessen and Professor L Morris

**TWESIGOMWE**, David

*Human Genetics*

*THESIS:* Characterisation of pharmacogene allelic variation in African populations and development of a novel diplotype calling algorithm

This thesis characterises the variation across diverse African populations in genes which encode key drug-metabolising enzymes. Changes in hypervariable genes such as CYP2D6 can influence response to medications. The thesis presents a novel bioinformatics pipeline, StellarPGx, which was used to identify known and novel variant combinations, a subset of which were validated using approaches that enable accurate reading of long DNA stretches. The research findings and the StellarPGx pipeline will contribute to effective precision medicine implementation strategies across Africa.

Supervisors: Professor S Hazelhurst and Professor Z Lombard

**UMEONWUKA**, Chuka Ifeanyi

*Physiotherapy*

*THESIS:* The effect of prism adaptation therapy and the current practice in treatment of post-stroke unilateral spatial neglect

Unilateral Spatial Neglect (USN) affects the rehabilitation process and leads to poor functional outcomes after stroke. This thesis reported the current treatment options and practices among physiotherapists in Nigeria and South Africa in the treatment of stroke survivors exhibiting USN symptoms. The work concludes with a randomised control trial that provides information on the beneficial effect of prism therapy in ameliorating spatial neglect symptoms in stroke survivors.

Supervisors: Professor V Ntsiea and Professor R Roos

**VERWEY**, Charl

*Paediatrics and Child Health*

*THESIS:* Epidemiology and pulmonary sequelae in infants with severe respiratory syncytial virus lower respiratory tract infection

A longitudinal case-control study was undertaken from April 2016 to December 2019, to determine the clinical and lung function sequelae at one and two years of age following respiratory syncytial virus lower respiratory tract infection in term infants.

Cases had more clinical, including wheezing and admissions for wheezing, and pulmonary function sequelae, through to two years of age compared to healthy controls. Whether prevention of RSV LRTI during infancy would reduce the risk for subsequent pulmonary sequelae warrants further investigation.

Supervisors: Professor Z Dangor and Professor S Madhi

**WAMBUI**, Kennedy Mwai

*Public Health*

*THESIS:* Analytical frameworks for studies prone to misclassification bias to identify correlates of disease protection. Case study: Immunity to malaria

The aim of this study was to develop analytical approaches that are sensitive to the challenge that the outcome and biological features are prone to differential misclassification and systematic bias respectively, then identify the correlates of protection against disease. The study compared two methodologies to reduce bias in malaria case-definition and developed a Bioconductor R-package to handle bias in high throughput protein microarray data. Finally, machine learning approaches were used to select correlates of malaria protection from 14 malaria cohorts in Africa. Supervisors: Professor E Musenge, Professor S Kinyanjui and Professor F Osier

**WIENER**, Emma Karin

*Human Genetics*

*THESIS:* Establishing a baseline for developmental disorder diagnosis by evaluating current processes and mapping common benign copy number variation in Africa

This thesis presents a baseline assessment of testing approaches and the genomic mutation spectrum relevant to developmental disorders in African patients. First, a retrospective file review of genetics clinic patients highlighted the need for improved cost-effective diagnostic testing. Secondly a catalogue of genomic copy number variants was produced from 1027 Sub-Saharan African individuals' whole genome sequences. The catalogue, which includes novel African variants, will enhance interpretation of new technology tests and help improve diagnostic testing for individuals with developmental disorders.

Supervisors: Professor A Krause, Professor Z Lombard and Professor S Hazelhurst

**WISHNIA**, Jodi Michelle

*Public Health*

*THESIS:* Understanding managers' experiences of public financial management policies and reform: a qualitative study from a South African provincial department of health

This study investigated how decision making at a provincial level impacts on how a district health system functions. Health care is often unpredictable, requiring flexibility and agility. Stronger collaboration between finance and service delivery managers is necessary for a better functioning health system. This can be achieved by providing more opportunities for managers to work together as they carry out their day-to-day duties.

Supervisor: Professor J Goudge

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# FACULTY OF HUMANITIES

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## DEAN: PROFESSOR G STEVENS

BA (Cape Town) BA Psych (Hons) MPsych (Western Cape) DLitt et Phil (Unisa)

### Doctor of Philosophy

**ANGURIA**, Lois Areereng

*History of Art*

**THESIS:** A study of the manufacture of visibility for South African Black women artist practicing in post-apartheid South Africa by intersecting commercial, academic, and social media engagement

This thesis examines the visibility of Black South African women artists in post-apartheid South Africa. The candidate critically explores the ways in which two contemporary Black women artists, namely Senzeni Marasela and Tony Gum, have created their own visibility despite the racist and exclusionary art industry, through rejecting inherited notions of Black womanhood and African art. These artists offer alternatives for how artists can take control of the visibility and impact of their work using social media.

Supervisor: Professor A Kearney

**AYORINDE**, Oladele Oladokun

*Music*

**THESIS:** Music, Agency and Social Transformation in Africa: a case of Fújì music in Lagos, Nigeria

This thesis is an ethnography of Fújì music in Lagos which explores the political economy of this urban popular genre within an economic ethnomusicology framework. The study examines the historical and contemporary manifestations of Fújì and investigates the processes through which it assumes agency within the social, political, and economic spheres of everyday life.

Supervisors: Dr M Jorritsma, Dr M Suriano and Dr R Orock

**BARRY**, Lichelle Edwina

*Drama and Film*

**THESIS:** Enter The Frame: reflections on cinematic practise

The creative practice for the research explores cinematography from the perspective of a wheelchair user, while the written thesis documents the process of creative practice and the theoretical inquiry that shapes the development of the work. Investigating film practices, including the production of virtual reality and experimental film, is central to the articulation of method and is connected to poetic strategies of writing to reflect the cinematic aesthetics and politics of creative practice.

Supervisor: Dr N Mntambo

**CALLAGHAN**, Natasha Chomba

*Psychology*

**THESIS:** South African academics' intent to quit and intent to emigrate: an integration of turnover and emigration theories

This thesis investigated relationships between individual differences, work attitudes, contextual/work environment, societal conditions and their effects on academics' intent to quit and intent to emigrate. The candidate sought to test a model that links turnover theory with migration literature to demonstrate that factors that impact academics' intent to quit are similar to those that impact their intent to emigrate.

Supervisor: Professor K Milner

**CELE**, Ziningi Isabel

*African Languages and Linguistics*

*THESIS*: The implementation of Language Management Project for previously marginalised South African indigenous languages in the office of the Chief State Law Adviser

This thesis uses language management variables, strategies and methodologies in investigating the challenges associated with the implementation of multilingual policies that favour previously marginalised indigenous languages at the Office of the Chief State Law Adviser. These are pertinent issues considering the history of South African language policies (pre-1994).

Supervisor: Dr E Zungu

**CHAKANYUKA**, Vongai Blessing

*Education*

*THESIS*: From Gender Disparity to Gender Parity in school leadership: narratives of female school heads from Harare Province, Zimbabwe

Female school heads continue to experience gender-related challenges and disparities as they lead schools. Through qualitative research, underpinned by the emancipatory paradigm, the candidate explored strategies female school heads employ to mitigate their unique leadership challenges and achieve gender parity. The study found that, despite the feminisation of the teaching profession, there was misalignment between gender policies and practices in school leadership with statistics showing men outnumbering women, and female heads' merits unacknowledged.

Supervisor: Dr G Motlal

**DELIUS**, Sarah Rebecca

*Political Studies*

*THESIS*: The Same in All but Name?

Marriage, Slavery, Patriarchy and Politics: Sierra Leone 1890-1990

This interdisciplinary dissertation explores how the categories of slavery and marriage have been defined and deployed within Sierra Leone from the late nineteenth century to the present day. The candidate identifies three key concepts, namely kinship, households and rights-in-persons, which have played a continuous yet constantly evolving role in the ways in which peoples in Sierra Leone have organised their political and personal relationships. These concepts are in turn connected to a larger analysis of the limitations and effects of British colonial policies regarding the legal abolition of slavery, and with the ways in which patterns of bondage were reconfigured under the guise of marriage following abolition.

Supervisor: Professor J Quirk

**ESPREY**, Yvette Marianne

*Psychology*

*THESIS*: The problem of thinking in Black and White: Race in the South African clinical dyad

The thesis examines the presence of race between patients and therapists within psychoanalytic psychotherapy and practice in South Africa, across four papers. The first critiques the historical relationship between psychoanalytic thinking and race; the second illuminates how groups can contain iterative cycles of rupture and repair when racialised engagements occur; the third examines anti-analytic possibilities in psychotherapy when race is unacknowledged; and the fourth reflects on the author's engagement with productively jeopardising her identity and subjectivity as a white psychotherapist.

Supervisor: Professor G Stevens

**GARDEE, Aarifah**

*Education*

**THESIS:** Mathematical identities and trajectories of secondary school learners  
The thesis is centred on the relationships between mathematical identity and mathematics learning among high school learners. Drawing on critical realism, the thesis develops a framework for analysing identity in classroom contexts, as learners interact with their teachers, their peers and mathematics. The study is the first to use critical realism to understand mathematical identity and therefore contributes to two fields: mathematics education and critical realism. A detailed study of 19 mathematics learners over two years, documents how identities are offered and constructed in mathematics classrooms and the implications of these for mathematics teaching.  
Supervisor: Professor K Brodie

**GODONGWANA, Motlatso Refilwe**

*Demography and Population Studies*

**THESIS:** Dynamics of HIV chronic comorbidities among adults in South Africa: a population-based mixed methods study  
This thesis applies cox-proportional hazard models to assess the time taken before HIV positive adults develop additional chronic conditions and uses qualitative methods to understand prevention and management challenges. The study recommends the strengthening of the Integrated Chronic Disease Model in South Africa in response to the growing prevalence of HIV chronic comorbidities.  
Supervisor: Professor N De Wet-Billings

**HASSEM, Tasneem**

*Psychology*

**THESIS:** Adapting an online screening tool for Major Depressive Disorder in South Africa  
This project focussed on adapting an online depression screening tool for South Africa. Depression has become a source of severe concern more so since the COVID-19 pandemic which has exacerbated mental health distress. South Africa is particularly challenged with its inequities in healthcare. This groundbreaking study provided online screening for depression at no cost to South Africans demonstrating the potential of digital solutions in providing sustainable and equitable healthcare.  
Supervisor: Professor. S Laher

**HORNE, Bronwyn Gillian**

*Digital Arts*

**THESIS:** Animated Sequences: Chronophotography in Contemporary Animation Practice  
This creative work is about making the imperceptible perceptible and questions how sequences of images speak to us in animated cinema. The focus of the research is on animation techniques from the Golden Age of American animation. The research unpacks the subtle techniques that go unseen by the viewer in standard viewing practice. The author has drawn from the practices of chronophotography to create an experimental short film and art exhibition that playfully reveal these techniques for the viewer.  
Supervisor: Associate Professor C Doherty

**JOHNSTONE, Kristina Helena**

*Drama*

**THESIS:** Pathways towards Embodied Technique: disrupting representationalism in South African contemporary dance praxis  
The thesis and cartography form part of an artistic research project that disrupts representationalism in South African contemporary dance praxis. The study demonstrates how discursive methodologies risk recrafting colonial scripts and tether contemporary dance practices within a framework that perceives such practices as responses to the aesthetics and practices of Western theatre dance. In exploring

possibilities for an alternative logic, the study articulates a shift from representation and spectatorial methodologies to the embodied practices that circulate across the bodies of practitioners in experimentation, performances and workshops.

Supervisors: Associate Professor D Andrew, Dr A Parker and Dr F Hagemann

**JOSEPH**, Confidence Mshakarara

*African Literature*

*THESIS:* Of Water and Water Spirits in Southern African Literature E

This thesis explores how Southern African writers and filmmakers employ water and water spirits as innovative literary devices. The candidate argues that while the histories of the nation have been tied to the land, a watery turn opens fresh insights, revealing the entanglements of human and non-human, land and water, natural and supernatural.

Supervisor: Professor C Hofmeyr

**KERN**, Anwynne Celeste

*Psychology*

*THESIS:* SGB parent members' and other parents' attitudes towards inclusion and exclusion in primary schools

Parents of children with barriers to learning have played an indispensable role as advocates for the implementation of inclusive education in South Africa. However, research into the roles of parents in the implementation of inclusive education has been lacking. The candidate's study has been the first to combine Amartya Sen's capability approach with an ecological perspective to produce a comprehensive framework for the implementation of inclusive education in South Africa guided by social justice principles.

Supervisors: Professor S Laher and Associate Professor E Walton

**KHUMALO**, Dumisani Ephraim

*African Languages and Linguistics*

*THESIS:* Ucwangingo olunzulu ngesu lokusetshenziswa kwesathaya emculweni kaMaskandi nomthelela ekuphilisaneni kwabantu

This study is at the core of African Indigenous Knowledge Systems as it cuts across ethnomusicology, sociolinguistics and heritage studies. It brings to the fore a plethora of reasons why maskandi artists use satire in the lyrical composition. It applies hermeneutics theory in analysing songs and shining light on traditional people's traditional lifestyle as well as their daily challenges and struggles.

Supervisor: Dr E Zungu

**LETSEKA**, Tebello

*Education*

*THESIS:* Grasping and appropriating epistemic relevance in the Humanities and Social Sciences: a critical realist argument

The candidate's research investigates epistemic inequality and exclusion in the Humanities and Social Sciences in higher education in South Africa. Through a critical realist lens, she proposes the adoption of epistemic relevance as a curricular and pedagogical principle to guide the process of grounding disciplinary knowledge in the local context to ensure epistemic and cognitive justice. In the end, adopting epistemic relevance makes it possible to move towards epistemic pluralism, thus transcending the dominance of Western epistemologies.

Supervisor: Dr T Mathebula

**MARTIN**, Cameron Robert

*Education*

*THESIS:* Independent capability for work: a critical functioning in a Capabilities Approach to higher education in South Africa

Using a Capabilities Approach framework, the study investigated the perceived poor

quality of tertiary graduates in South Africa and identified functionings valued by employers that could be foregrounded in tertiary education programmes. The unique contribution is the resultant development of the concept of Independent Capability for work, and a means to assess this, which opens an implementable pathway to educational practice that supports the ability of graduates to enact their valued functionings in the capability of work.

Supervisor: Dr T Bekker

**MATHEBULA**, Mpho Margaret

*Psychology*

*THESIS:* Affective dimensions of naked body protests

This thesis theorised naked body protests using affect and feminist theories. The study found that affect is a generative lens through which the body speaks. Naked body protests can have long-lasting psycho-social and material effects. African women theorise the world in transgressive and agential practices of protest.

Supervisor: Associate Professor H Canham

**MKOKO**, Cynthia Hlobisile

*Linguistics*

*THESIS:* Some Aspects of siSwati Phonology

This thesis presents an original analysis of the synchronic phonology of siSwati. The focus is on repair strategies in the context of hiatus resolution, minimality effects, NC syllabification, and loanword rephonologisation. The candidate identifies the morphological and phonological domains that trigger the repair strategies and comes up with a constraint hierarchy that accounts for this phenomenon. The study places the syllable at the centre of analysis, and its main finding is that the repair strategies are aimed at maintaining the preferred siSwati CV syllable structure and minimally disyllabic words.

Supervisor: Associate Professor M Kadenge

**MOLEBATS**, Palesa Malehlohonolo

*Education*

*THESIS:* How are the relationships between South African universities and development understood?

This thesis analysed the ways in which South African universities contribute to social and economic development. The candidate problematised the evidence that demonstrates the different types of relationships. Her rigorous analysis showed that South African universities appear to make neither significant entrepreneurial contributions, nor developmental contributions to society and the economy. It also showed that simultaneously, universities in South Africa are expected to perform more and more welfare functions.

Supervisor: Professor S Allais

**MOLEFE**, Nicholas

*Education*

*THESIS:* Developing practices of mathematics teachers through a Professional Learning Community

The research investigated the ongoing learning of a group of high school mathematics teachers in a professional learning community, over two years. The thesis contributes to knowledge about mathematics teacher learning, the relationships between teachers' conversations in the community and their classroom practice, and the facilitator's role in guiding the teacher learning. The scope of the thesis is wide-ranging and the design innovative. Using both quantitative and qualitative analysis techniques, the thesis documents the teachers' learning, their challenges and their development of pedagogical content knowledge.

Supervisor: Professor K Brodie

**MOSHUGI**, Kgomotso Samuel

*Music*

**THESIS:** Transnationalisation and Indigenisation of Euro-American Hymns in South Africa through the Creative Agency of Arranging

This thesis with a creative component draws on the researcher's extensive experience as a cultural practitioner to study the migration of musical ideas. It documents the social history and adaptation of Euro-American hymns among black Seventh-day Adventists in South Africa, drawing on creative systems theory to present several decolonial propositions dismantling the notion of individual genius in musical composition, arguing for the often uncanonised originality and repressed intelligence embodied in the localisation of these hymns.

Supervisor: Associate Professor B Pyper

**MSEKELE**, Sisanda

*Anthropology*

**THESIS:** The Blind Gaze - A critical examination of disability and queer sexuality in South Africa

The dissertation is about how marginal and different bodily and sexual identities are produced, and how these constructions contribute to or disrupt normative ways of living in the world. This work pays specific attention to queer, disabled individuals in South Africa. There are a number of critically important arguments, and the most central argument is in the assertion that disability functions as queerness, and queerness functions as disability. This is a radically intersectional argument that looks at how queerness and disability are co-constructed.

Supervisors: Associate Professor S Chari and Associate Professor M Yarbrough

**NKAMBULE**, Fikile Sibongile

*Education*

**THESIS:** Pedagogical integration of Information and Communication Technology in Higher Education: a case study of Initial Teacher Education Programmes in Eswatini

The study explored the pedagogical ICT integration practices among Initial Teacher Educators in Eswatini. The study followed a mixed methodology approach where quantitative and qualitative data were collected. The major findings were on ICT integration practices and gaps on curriculum structures creating barriers to pedagogically integrate ICT in HEIs.

Supervisors: Dr R Dlamini and Dr A Masinire

**OLANIYAN**, Akintola

*Media Studies*

**THESIS:** From Iwe Irohin to saharareporters.com: hardcoding citizen journalism in Nigeria

The thesis investigates the emergence of new, digital-born news platforms into the Nigerian media post-1999 and their appropriation as new channels for political communication and citizen journalism. Using Political Economy Theory and Public Sphere, coupled with mixed methods of interview, survey and content analysis, the thesis argued that new media may have democratized the communicative environment by allowing many ordinary Nigerians access to media that was impossible with traditional newspapers. However, there is still an elite domination of overall communication online.

Supervisor: Associate Professor U Akpojivi

**OOKO**, Gloria Anyango

*Media Studies*

**THESIS:** Exploring Power Struggles in Online Spaces: a study of selected political whatsapp communities in Kenya

The candidate interrogates WhatsApp technology and how it enables contestations that define relations between users in WhatsApp communities. The thesis maintains

that WhatsApp communities replicate modes of communication that maintain power hierarchies that existed in “old” media. It uses a discourse-material approach to explain how WhatsApp’ affordances influence users’ online community membership, namely, the right to participation, identity negotiation and sense of belonging.  
Supervisor: Associate Professor D Ligaga

**PARKINS-MALIKO**, Natasha Bernadette *Interpreting and Translation*

*THESIS:* Cognitive Language Processing through Positron Emission Tomography

This thesis investigates the cognitive language processing of South African Sign Language interpreters using positron emission tomography. The concept of translanguaging is fundamental to this study as it elucidates the intersection of ubuntu translanguaging and interpreting praxis. The research found significant differences in brain metabolism in the right Primary Visual Cortex (rPVC), left Primary Visual Cortex (lPVC), right inferior lateral anterior Temporal Cortex (riLAT), left anterior Medial Temporal Cortex (lMAT) and the right inferior lateral posterior Temporal Cortex (riLPT) across all respondents.

Supervisors: Professor M Vangu and Professor J Inggis

**PEAKE**, Bronwyn Geraldine *Education*

*THESIS:* The transition from high school to the workplace for young adults who have a disability

This qualitative research explored the transitioning process of young adults with disabilities from school to workplace. The researcher, with 29 years of experience in inclusive education, critically interrogated the extent of guidance received by learners in order to prepare them for successful transitioning and found significant gaps in these young adults’ experience of support. Both constraints and enablers are explored from both the young adult and employer perspectives, after which in-depth recommendations are made on how to sufficiently prepare future learners with disabilities for the workplace.

Supervisors: Associate Professor C Storbeck

**SHERMAN**, Byron Boaz *African Literature*

*THESIS:* Ideologies of Blackness and the translation of Black African literature in Maoist China: a paratextual exploration

This dissertation considers how the racialization of early twentieth-century China and related political and literary developments impacted the translation and paratextual presentation of Black literatures. It identifies pre- and post-1949 shifts and continuities in paratextual discourses in order to contextualize the translation of African literature during the early Maoist period.

Supervisor: Professor C Hofmeyr

**SIBANDA**, Alois Sibaningi Baleni *Sociology*

*THESIS:* Violence and social cleavages in the 2015 /16 Fees Must Fall movement: a case study of Wits University, South Africa

This pioneering study is of a social movement that has reshaped our workplace and reverberated across global political thought. It adds empirical depth and nuance to discussions that have been contentious if polarised. It demonstrates that ‘Fees Must Fall’ not only stemmed from disadvantage and discontent, but that its internal dynamics transformed how many of its participants related to questions of race, gender, and nationality. This work represents an important stage in its author’s intellectual development and a foundation for further research.

Supervisors: Professor K Von Holdt and Professor L Landau

**TARUVINGA**, Gwinyai Regis

*Political Studies*

**THESIS:** Water Governance and the Colonial Legacy in Zimbabwe

This study explores the impacts of colonial institutions on post-colonial Zimbabwe's water governing policies. It evaluates Zimbabwe's water governing policies after the attainment of independence using path dependence as an underlying theory. The notion that "history matters" in present day outcomes is at the heart of this study.

Supervisor: Dr S Louw

**WEITZ**, Maria Susanna

*Education*

**THESIS:** Exploring the predictive power of early assessments in mathematics in South Africa

The study explored quantitatively/qualitatively the importance of mathematical structural-thinking in Grade 2. The candidate draws on the framework of Wright et al. (2006) and uses its interview-based-assessment to evaluate the participants' structural-thinking. The findings suggest that the assessment informed by structural-thinking was a better predictor of Grade 6 performance and accentuated the importance of structural-thinking. Maria recommends that since young learners can appreciate mathematical-structure, teachers should ideally make learners aware of mathematical-structure.

Supervisors: Dr J Du Plessis and Professor M Askew

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# FACULTY OF SCIENCE

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## DEAN: PROFESSOR N CHETTY

BSc Hons (Natal) MS PhD (Urbana-Champaign) MSAIP MASSAf

### Doctor of Philosophy

**AINA**, Yusuf Adedoyin *Geography, Archaeology and Environmental Studies*

*THESIS:* Applying the driving force-state-response framework and earth observation in evaluating environmental impacts of urban expansion: the case of Riyadh City, Saudi Arabia

The study explored the use of satellite-derived data within the Driving force-State-Response framework to assess the sustainability of Riyadh, Saudi Arabia. The findings show the environmental impacts of rapid urbanization and the transformation of urban governance to address environmental changes. There is a need for more remote sensing-based indicators.

Supervisors: Professor E Adam and Dr A Wafer

**BIGNOUX**, Monique Jeanette *Molecular and Cell Biology*

*THESIS:* Targeting LRP/LR for the prevention of tumour formation and metastasis in lung cancer models

siRNA-mediated downregulation of LRP/LR has a 5-fold function in impeding key cancer hallmarks in lung cancer cells, which therefore has the potential as a powerful therapeutic for improving the prognosis of those suffering from lung cancer. Furthermore, PLGA nanocapsules will provide an effective in vivo delivery system for this LRP-targeting siRNA.

Supervisors: Professor S Weiss, Dr E Van der Merwe and Professor M Kaur

**BOOYSEN**, René *Geosciences*

*THESIS:* The potential of drones in multi-scale hyperspectral imaging for mineral exploration: examples from Southern Africa

The candidate investigated the performance of hyperspectral imaging with drones for geological mapping and the integration of different methodologies. The discovery of new mineral deposits is required to ensure the availability of the metals needed for the energy transition including lithium and rare earths. At the same time, the human footprint of exploration must be minimised to ensure social acceptance. The research demonstrated that innovative exploration based on remote sensing techniques boosts the efficiency of mineral exploration with minimal environmental impact.

Supervisor: Professor P Nex and Professor R Gloaguen

**BUTHELEZI**, Sandile *Molecular and Cell Biology*

*THESIS:* Modulation of adhesion-dependent signalling by CK2 and its associated regulators in HOSCC cells

Protein Kinase CK2 introduces supplementary regulatory influences on oncogenic pathways and is an important target for therapeutic interventions. This research identified a unique role for CK2 in oesophageal cancer cells, where it shepherds an

alternative pathway to PKB-dependent proliferative pathways, introducing another mechanism for the evasion of PKB-targeted therapy.

Supervisor: Professor R Veale

**CHEN, Chia-yu**

*Molecular and Cell Biology*

*THESIS:* The evaluation of the toxicity of Bacillus thuringiensis Cry proteins against reference and field populations of fall armyworm, Spodoptera frugiperda (J.E. Smith), in South Africa

The candidate evaluated whether current agriculturally important insecticidal bacterial proteins would be effective in controlling the newly invasive maize pest, fall armyworm, in South Africa. The PhD study revealed that two protein toxins would be effective, thus setting the foundation for future fall armyworm control strategies in South Africa.

Supervisor: Professor G Bouwer

**GU, Liang**

*Molecular and Cell Biology*

*THESIS:* Establishing the role of Cholesteryl Ester Transfer Protein (CETP) in Breast Cancer CETP is a cholesterol transporter that maintains cholesterol balance to limit accumulation within cancer cells, preventing resistance. Knocking down CETP reduced breast cancer resistance in-vitro and reduced tumour growth by 86% in nude mice. This study showcased that CETP could be used as a drug resistance marker in breast cancer.

Supervisor: Professor M Kaur

**IYAMBO, Tetukondjele Panduleni**

*Animal, Plant and Environmental Sciences*

*THESIS:* Redirection of the carbon cycle by households in a savanna socio-ecological system in rural South Africa

The study investigated the human appropriation of plant biomass production in a savanna socio-ecological system through land-based livelihood activities. It sheds new light on carbon dynamics at the household and community levels, including consideration of carbon backflows to assess net carbon removal from the local environment by rural households.

Supervisor: Professor W Twine

**JIRAH, Sifelani**

*Geosciences*

*THESIS:* Middle Permian diversity of large herbivores: taxonomic revision of the titanosuchidae (Therapsida, Dinocephalia) of the Karoo Basin, South Africa

Titanosuchid dinocephalians were part of the fauna of the middle Permian terrestrial ecosystems. This study determined the number of valid titanosuchid species and for the first time elucidated their precise stratigraphic ranges thus contributing to an understanding of biodiversity changes during the middle Permian.

Supervisors: Professor BS Rubidge and Professor FN Abdala

**KHANYE, Nthabiseng Fortunate**

*Physics*

*THESIS:* Dark matter constraints of galaxy clusters hosting diffuse radio emissions

In this thesis we studied the multi-frequency implications of dark matter annihilation in galaxy clusters that host diffuse radio emission by incorporating archival radio observations. We assumed the diffuse emission to be a by-product of the synchrotron radiation produced when electrons resulting from dark matter annihilation come into contact with cluster magnetic fields.

Supervisors: Dr P Marchegiani and Dr G Beck

**KIEFER, Mathias Ameer**

*Chemistry*

*THESIS:* The quest for an improved Solid Oxide Fuel Cell (SOFC) electrolyte: exploring bismuthate materials

Advanced laboratory and synchrotron X-ray scattering techniques, along with electrochemical impedance and Raman spectroscopies were used to investigate the structure-property relationships and phase behaviour of bismuthate materials. This revealed the vital role of the local structure on the phase stability and oxide ionic conductivity of these solid oxide electrolytes.

Supervisors: Professor D Billing and Professor C Billing

**KOOVARJEE, Bavisha**

*Geosciences*

*THESIS:* Calc-silicate xenolith - magma interactions in the Rustenburg Layered Suite, Bushveld Complex

This study constrains the extent of interaction between calc-silicate wallrock fragments and their enclosing mafic magma in the Bushveld Complex (South Africa). A dynamic environment is proposed in which mechanical (stopping, gravitational settling) and advective-diffusive chemical processes result in a mineralogically and chemically complex contact zone surrounding the xenoliths, with implications for Cr mineralisation.

Supervisors: Professor P Nex and Professor R Gibson

**MAARTENS, Ronald John**

*Mathematics*

*THESIS:* The k-Ramsey number for cycles

Ramsey theory is one of the classical areas of study in Graph Theory. In this doctoral thesis the candidate investigates the interesting and important topic, The k-Ramsey Number for Cycles where both cycles under consideration are not bipartite. Amongst other results, he determined  $R_k(C_3, C_4)$ ,  $R_k(C_3, C_5)$ ,  $R_k(C_4, C_5)$  and  $R_k(C_5, C_5)$  for all the possible values of k in each case. From these results and others, he concluded with a conjecture regarding the formula for  $R_k(C_{2n+1}, C_{2m+1})$  where  $n \geq m \geq 1$ ,  $(n, m) \neq (1, 1)$  and  $k = 5, \dots, 4n+1$ .

Supervisors: Professor E Jonck and Professor J Hattingh

**MAGUBANE, Alice**

*Chemistry*

*THESIS:* Synthesis of carbon dots reduced palladium catalysts: Application in the hydrogenation of cinnamaldehyde reaction

Carbon dots, a novel form of carbon, with size less than ten nanometers, was used as a reducing agent and support for palladium catalysts. The model catalysts were synthesized, characterized and were selective for the reduction of only the carbon-carbon double bond in the liquid phase hydrogenation of cinnamaldehyde.

Supervisors: Professor NJ Coville and Dr MS Maubane-Nkadimeng

**MAPHUPHA, Mudzuli Maxwell**

*Chemistry*

*THESIS:* Application of biocatalysts in the synthesis of anti-tuberculosis compounds and analogues

This study involved the application of multiple enzymes in the biocatalytic synthesis of benzimidazoles and benzothiazoles fused with triazole rings and quinazolinone derivatives. Thereby, producing novel compounds similar to those with anti-tuberculosis activity. A novel approach for synthesising triazole rings via an enzymatic click-type reaction was demonstrated.

Supervisors: Professor D Brady and Professor C de Koning

**MATSHETSHE**, Kabo Isaac

*Chemistry*

**THESIS:** Synthesis and characterization of functionalized graphene oxide-embedded thin film composite membranes for desalination applications

The study reports on the fabrication of graphene oxide modified thin film membranes for reverse osmosis desalination of water.

Supervisors: Professor N Moloto, Dr K Sikhwivhuli, Dr G Ndlovu and Dr Z Tetana

**MAYIMELE**, Nhluvuko

*Physics*

**THESIS:** Inverse opals and waveguides to enhance optical absorption and efficiency of photovoltaic devices

The thesis reports on the synthesis and characterization of Ag, Au, SiO<sub>2</sub> and TiO<sub>2</sub> nanoparticles as well as hybrids Ag/Au@SiO<sub>2</sub> and Ag/Au@TiO<sub>2</sub> for use as light absorbers and waveguides in a a-Si:H solar cell. In addition, theoretical modelling of the optical properties of the materials as well as the photovoltaic performance based on the modifications were conducted.

Supervisors: Professor A Quandt and Professor D Wamwangi

**MENTE**, Pumza

*Chemistry*

**THESIS:** The use of functionalized polymers to make hollow carbon spheres to be used as supports in catalysis

Metal particle agglomeration is known to be a factor responsible for the reduction in catalytic activity and selectivity of catalysts. In this study, a cobalt catalyst was placed either inside or outside a hollow carbon sphere to study the effect via a model hydrogenation reaction and to reveal information on cobalt particle growth.

Supervisors: Professor N Coville and Dr R Forbes

**MILLER**, Ashadee Kay

*Animal, Plant and Environmental Sciences*

**THESIS:** Scents and Scentability: an Investigation into the Chemical Crypsis of the Puff Adder (*Bitis arietans*)

Chemical crypsis in vertebrates is poorly documented. The candidate was the first to demonstrate this phenomenon in a terrestrial vertebrate. Her research examined the extent of this phenomenon in an ambushforaging snake species and also investigated the potential mechanisms involved. This research contributes to our understanding of predator-prey dynamics within the scope of chemical ecology.

Supervisor: Professor G Alexander

**MKHARI**, Orlette

*Chemistry*

**THESIS:** Synthesis and supporting of carbon dots onto titania, carbonized chitosan, silica spheres, hollow and solid carbon spheres for the removal of methyl orange from wastewater

The study established a systematic approach for incorporation of carbon nano-dots on various solid support matrix. This tuned the optical properties of the composites which enhanced the removal of methyl orange dye from wastewater. These findings will aid in the design and use of the composite materials in wastewater treatment.

Supervisors: Dr M Maubane-Nkadameng, Professor NJ Coville and Professor E Nxumalo

**MPALA**, Thandiwe Annastacia

*Geography, Archaeology and Environmental Studies*

**THESIS:** Perspectives on adaptation to water scarcity and drought of small-scale farmers in Masvingo, Zimbabwe

The study investigated the interlinkages between climate change and water security. Of particular interest was to understand how their combinations impact the food security of rural farming households and how these households use various

asset portfolios available to them to build their adaptive capacity and resilience against climate change and water insecurity. The findings have been shared in one publication in an international Journal.

Supervisor: Professor MD Simatele

**MPANZA**, Mbalenhle *Geography, Archaeology and Environmental Studies*

**THESIS:** Assessment of the environmental and socio-economic impacts of unrehabilitated tailings storage facilities: study of Blyvooruitzicht Gold Mine liquidation using dispersal and remote sensing models

This thesis aimed to quantify the environmental and socio-economic impacts borne by the communities that are affected by the sudden closure of a nearby mine, after the liquidation of a mining company. The thesis is primarily scientific; however it also addresses policy issues regarding how various regulatory frameworks governing mining, the environment and companies interact with each other. The study demonstrated the impacts of unmanaged tailings storage facilities (TSFs) through developing dust deposition models, using dispersion modelling and remote sensing techniques.

Supervisors: Professor E Adam and Dr R Moolla

**NANKOO**, Nikita *Molecular and Cell Biology*

**THESIS:** South African cassava mosaic virus movement and nuclear shuttle proteins: uncovering their structures

This thesis was based on the structural characterization of the movement and nuclear shuttle proteins of South African cassava mosaic virus. Expression of these viral proteins in vitro, their purification and structural characterization was successfully achieved in this study.

Supervisors: Professor MEC Rey and Dr IA Achilonu

**NAPE**, Isaac Mphele *Physics*

**THESIS:** Engineering robust photonic quantum states for quantum communication and information

The candidate devised techniques for preserving high dimensional spatially structured photons subject to malignant environmental effects. He developed novel characterization tools for classical and quantum states of light transmitted through complex aberrations, transported multi-dimensional entangled photons through single mode fiber and engineered an efficient characterization technique for noisy quantum entangled channels.

Supervisor: Professor A Forbes

**NCUBE KANYIKA**, Busisiwe Tamara Chali *Molecular and Cell Biology*

**THESIS:** Protein-protein interactions in a geminivirus-cassava system

Cassava is a food security and industrial crop of economic benefit in Sub-Saharan Africa. Geminiviruses devastate cassava yields. Understanding the interactions of the geminivirus movement protein in cassava is essential to combat infection. In this study molecular mechanisms of the South African mosaic virus were identified, and a model constructed.

Supervisors: Professor MEC Rey and Dr N Gentle

**NDOBOCHANI**, Nonofho *Geography, Archaeology and Environmental Studies*

**THESIS:** Understanding the dynamics of herding and cattle posts in pre-colonial Tswana of the last 500 years

Tswana capitals boomed spatially and economically from 17th century. The cattle post concept matured into a reliable system for managing the increased cattle

wealth and risk characterizing this period. The proportional reduction in sizes of areas devoted for livestock management at capitals is a yardstick for detecting this system archaeologically.

Supervisors: Professor K Sadr and Dr T Russell

**NETSHIONGOLWE**, Khathutshelo Emmanuel *Chemistry*

*THESIS:* Repurposing of sludge generated from the treatment of acid mine drainage. The candidate's study focused on the repurposing of high density sludge (HDS) discharged after acid mine drainage treatment. Findings showed that HDS has the potential to adsorb trace metals and phosphate in wastewater. Ochres could also be selectively precipitated from AMD for use in paints and artwork.

Supervisors: Professor H Tutu, Professor E Cukrowska and Professor L Chimuka

**NGWENYA**, Nomhle *Geography, Archaeology and Environmental Studies*

*THESIS:* The role of institutional frameworks in promoting green bonds to finance carbon capture and storage in South Africa

The candidate explored the role of institutional frameworks in promoting green bonds to finance carbon capture and storage in South Africa. Her research demonstrated that the use of innovative debt instruments such as green bonds can contribute to funding transitional technologies if supported by strong regulatory and policy frameworks.

Supervisor: Professor MD Simatele

**NKABINDE**, Siyabonga Siphon *Chemistry*

*THESIS:* Colloidal synthesis and characterization of molybdenum and tungsten-based phosphide electrocatalysts for hydrogen evolution reaction

The candidate explored the use of colloidal synthesis to prepare molybdenum and tungsten phosphide-based nanomaterials for use as alternative electrocatalysts to platinum for hydrogen production. This led to the identification of various catalyst properties that influenced catalytic activity. The results reported provide new strategies towards developing highly efficient electrocatalysts.

Supervisor: Professor N Moloto

**PARKINSON**, Alexander Haig *Geosciences*

*THESIS:* Novel ichnology and the taphonomic significance of insect related bioerosion in bone

This thesis investigated the origins and diversity of osteophagia, the behavioural phenomena of eating bone, particularly amongst insects. Trace fossils were studied from Brazil, China and South Africa. The ancient origins of this behavioural phenomena was pushed back some 90 million years and four new ichnospecies were taxonomically diagnosed.

Supervisors: Dr Z Jinnah, Professor LR Berger and Dr P Randolph-Quinney

**PATEL**, Tamanna *Animal, Plant and Environmental Sciences*

*THESIS:* The lesser-known declines amongst South Africa's antelope: assessing long-term population dynamics in the uKhahlamba Drakensberg Park and overall status across the country

The candidate used long-term monitoring data to highlight the critical decline of some of the iconic mammalian herbivores in the Drakensberg biodiversity hotspot. She also highlights the importance of citizen science in complementing official monitoring data, when looking at national mammals population trends to assess conservation targets.

Supervisor: Professor F Parrini

**PISE**, Anil Audumbar

*Computer Science and Applied Mathematics*

**THESIS:** Facial emotion recognition using temporal relational network: an Application to E-learning

The thesis reports the use of facial expression recognition to detect emotion as an indicator for estimating a learner's level of engagement in interacting with e-learning systems. The candidate started by exploring the significance of extracting representative frames followed by emotion estimation using frameworks capable of temporal reasoning and adaptive mapping mechanisms for learning affect estimation.

Supervisors: Professor H Vadapalli and Professor I Sanders

**SHUMBULA**, Ndivhuwo Prince

*Chemistry*

**THESIS:** Antimicrobial activity of silver and copper nanoparticles incorporated with biodegradable polymeric scaffolds for wound healing application

The study reports on the fabrication of novel nanoengineered wound dressing composites that incorporates antimicrobial silver and copper nanoparticles in biodegradable 3D polymeric scaffolds.

Supervisors: Professor N Moloto, Dr P Tetyana and Dr Z Njengele-Tetyana

**SKINNER**, Andrew Cameron Bennett

*Geography, Archaeology and  
Environmental Studies*

**THESIS:** Valley of Snakes: rock art and landscape, identity and ideology in the south-eastern mountains, Southern Africa

The candidate studied knowledge systems in the Maloti-Drakensberg, seeking to understand if modern traditional healers had preserved beliefs of the San forager societies that came before them. He found that they had, and that participation of local communities was essential to fully understanding the rock art of the region.

Supervisor: Dr W Challis

**TAKALANI**, Ntendeni Annah

*Mathematics*

**THESIS:** Algebraic Structures in Integer Partitions

The thesis imposes a new algebraic group structure on the set of sub-partitions of a positive integer which turns out to be isomorphic to the classical direct-product group of residue classes. As applications, new properties of perfect and complete partitions are obtained using combinatorial and analytic techniques.

Supervisor: Professor A Munagi

**THIEBAUT**, Michelle

*Chemistry*

**THESIS:** Lithium iron phosphate cathode materials: investigating the structural changes caused by synthetic modifications and doping

High resolution X-ray diffraction and X-ray absorption spectroscopy, both synchrotron-based techniques, as well as Mossbauer and Raman spectroscopies were employed to study the influence of synthetic methodologies on the average and local structure

of lithium iron phosphate. It was shown that certain strategies could reduce oxidation of iron(II), and minimise impurities and defects.

Supervisors: Professor C Billing, Professor D Billing and Professor D Naidoo

**TSHININGAYAMWE**, Mbili

*Geosciences*

*THESIS:* Petrogenesis and detailed geochemical and isotopic studies of the Epembe carbonatite and syenite rocks, NW Namibia

The thesis is focused on understanding the formation of carbonatite and syenite rocks from the Epembe area in northern Namibia by means of geochemistry. Results show that these rocks are formed as a result of fractional crystallization processes of mantle derived mafic parental melts and later affected by hydrothermal fluids.

Supervisors: Professor R Bolhar and Professor P Nex

**ZWANE**, Bongekile Nomasonto Patience

*Geosciences*

*THESIS:* A qualitative study of wood charcoal that is dated to the time of the Toba volcano supereruption from Sibudu and Border Caves, South Africa

The candidate conducted an anthracological analysis of wood charcoal that is dated between 74 and 72 000 years old (ka). She investigated whether the 74 ka volcano eruption of Toba affected plants in South Africa. Her findings contribute to the debate about the effects of the Toba eruption on global climate.

Supervisor: Professor M Bamford

**ZWOLINSKI**, Alexander Michal

*Molecular and Cell Biology*

*THESIS:* Mutational and structural analyses of Tomato curly stunt virus pathogenicity determinants

The candidate investigated the effect of DNA sequence differences on the pathogenicity of two variants of Tomato curly stunt virus, an important tomato pathogen in South Africa. He identified two regions of the genome that play a critical role in determining disease severity with significant implications for the tomato industry.

Supervisors: Professor MEC Rey and Dr IA Achilonu

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# GRADUATION AWARDS

## FACULTY OF SCIENCE

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### Prizes to be presented at the Faculty's prize giving ceremony

#### **MCB Teaching Assistant Award:**

This prize of R1 000.00 is awarded annually to a Teaching Assistant who has provided consistent and outstanding service to undergraduate students and to the School of Molecular and Cell Biology in the previous year.

***Monique Jeanette Bignoux***

#### **Shimadzu Top Achiever Award:**

This prize of R5 000.00 is awarded to the most distinguished Biochemistry and Cell Biology PhD student in the School of Molecular and Cell Biology.

***Monique Jeanette Bignoux***

#### **The Alex von Holy Prize:**

This book prize of R1 200.00 is awarded in memory of the late Professor Alex von Holy to the MSc and or PhD student with the most outstanding postgraduate research in the field of Microbiology within the School of Molecular and Cell Biology.

***Chia-yu Chen***

# OFFICERS OF THE UNIVERSITY

**Chancellor** DR NJ DLAMINI  
MBChB (Natal) DBL (Unisa) MBA (Witwatersrand) IEC (USA)

**Vice-Chancellor and Principal** PROFESSOR Z VILAKAZI  
BSc (Manchester) MSc PhD (Witwatersrand) MASSAf FAAS

**Chairman of Council** MR I SHONGWE  
BA (Wesleyan) MPhil (Oxford)

**Senior Deputy Vice-Chancellor (Academic)** PROFESSOR R OSMAN  
BA (Witwatersrand) HDipEd BEd (Unisa) MEd PhD (Witwatersrand) MASSAf

**Deputy Vice-Chancellor (Research and Innovation)** PROFESSOR L MORRIS  
BSc (Hons) (Witwatersrand) DPhil (Oxford) FRSSA FAAS MASSAf

**Deputy Vice-Chancellor (Systems and Operations)** PROFESSOR IR JANDRELL  
BSc (Eng) GDE PhD (Witwatersrand) IntPE(SA) PrEng FSAAE FSAIEE SMIEEE

**Registrar** MS CG CROSLY  
BA HDipEd (Witwatersrand) BEd Hons (Unisa) MEd (Witwatersrand)

**Chief Financial Officer** MS MM MANYAMA  
CA (SA) BCom Accounting (Cape Town) BCompt Hons (Unisa) BCom Hons Taxation (Pretoria) MBA (GIBS)

**Dean of Student Affairs** MR JAP SEPTEMBER  
BA MPhil (Cape Town)

## DEANS OF THE FACULTIES

**(Acting) Faculty of Commerce, Law and Management** PROFESSOR J COHEN  
BCom Hons PhD (Witwatersrand)

**Faculty of Engineering and the Built Environment** PROFESSOR T MAJOZI  
BScEng(UND) MScEng(UND) PhD (UMIST) CEng PrEng FICHEM FAAS MASSAf FWISA FSAAE

**Faculty of Health Sciences** PROFESSOR SA MADHI  
MBBCh MMed PhD (Witwatersrand) FCPaed(SA)

**Faculty of Humanities** PROFESSOR G STEVENS  
BA (Cape Town) BA Psych (Hons) MPsy (Western Cape) DLitt et Phil (UNISA)

**Faculty of Science** PROFESSOR N CHETTY  
BSc Hons (Natal) MS PhD (Urbana-Champaign) MSAIP MASSAf

**President of Convocation** S BOLON  
BA Hons MA (Witwatersrand)

# IHELE THE PROCESSION

## IHELE

Words and music by S.B.P. Mnomiya

Anhom  
Falalala  
Obani labo?  
Baphi Ahhom?

Ngibona beza  
Beyikazela  
Bathwel 'ongiyane  
Bavela kuphi na?  
Obani labo?  
Ongqondongqondo  
Osibakhulu  
Yibo labo hhom!

Yini na leyo?  
Ihele  
Ihele lezingwazi zakithi  
Ahhom udwendwe  
Ahhom  
Udwendwe lwezingqwele zakithi  
Nant' ihele  
Longqondongqondo  
Nant' ihele  
Losibakhulu  
Udwendwe  
Udwendwe lwezingqwele zakithi

## THE PROCESSION

Who are those?  
Which, Falalala?

I see them coming  
Walking with swinging garments  
They are wearing head rings  
Where do they come from?  
Who are those?  
They are people with knowledge  
They are people in authority  
These are the ones

What is that?  
It is a procession  
A procession of our heroes

It is a procession  
A procession of our champions  
Here is a procession  
Of people of knowledge  
Here is a procession  
Of people of knowledge  
A procession  
A procession of our heroes

Ihele is known as the 'Black' *Gaudeamus Igitur*. In song, the writer, Mnomiya uses very poetic language to describe a graduation ceremony. The soloist sings of the 'strange' procession of people in long robes and head gear. The choir responds by saying that these people are academics who read profound books of knowledge.

Mnomiya goes on to say that the graduates are an inspiration to all of us, and we will also graduate like them one day. The song goes on to wish the graduates well and it ends with a resounding "Halala" (well done!).

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# GAUDEAMUS

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Gaudeamus igitur  
Juvenes dum sumus  
Post jucundum juventutem  
Post molestam senectutem  
Nos habebit humus.

Ubi sunt qui ante nos  
In mundo fuere?  
Vadite ad superos  
Transite in inferos  
Hos si vis videre.

Vita nostra brevis est  
Brevi finietur.  
Venit mors velociter  
Rapit nos atrociter  
Nemini parcetur.

Vivat academia  
Vivant professores  
Vivat membrum quodlibet  
Vivat membra quaelibet  
Semper sint in flore.

Vivant omnes virgines  
Faciles, formosae.  
Vivant et mulieres  
Tenerae amabiles  
Bonae laboriosae.

Vivant et republica  
et qui illam regit.  
Vivat nostra civitas,  
Maecenatum caritas  
Quae nos hic protegit.

Pereat tristitia,  
Pereant osores.  
Pereat diabolus,  
Quivis antiburschius  
Atque irrisores.

Let us rejoice therefore  
While we are young.  
After a pleasant youth  
After a troublesome old age  
The earth will have us.

Where are they  
Who were in the world before us?  
You may cross over to heaven  
You may go to hell  
If you wish to see them.

Our life is brief  
It will be finished shortly.  
Death comes quickly  
Atrociously, it snatches us away.  
No one is spared.

Long live the academy!  
Long live the teachers!  
Long live each male student!  
Long live each female student!  
May they always flourish!

Long live all maidens  
Easy and beautiful!  
Long live mature women also,  
Tender and loveable  
And full of good labor.

Long live the State  
And the One who rules it!  
Long live our City  
And the charity of benefactors  
Which protects us here!

Let sadness perish!  
Let haters perish!  
Let the devil perish!  
Let whoever is against our school  
Who laughs at it, perish!

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# ACADEMIC DRESS

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The academic dress of this University is patterned on that of the Universities of Oxford and Cambridge, with modifications based on the model of the University of London and certain individual features, particularly in the costumes of office bearers and the hoods of degrees of bachelor and master.

## Dress for Office Bearers

- The Chancellor wears a scarlet silk gown with a broad facing of black velvet down each side, embroidered in gold and a black velvet cap with gold cord and tassels.
- The Vice-Chancellor and Principal wears a blue silk gown with a broad facing of gold silk down each side, embroidered in blue, the sleeves being lined with gold silk. The cap is of the same design as that of the Chancellor.
- The Chairman of Council wears a black silk gown with a broad facing of red velvet down each side and around the neck, the sleeves being lined with gold silk. The cap is of the same design as that of the Chancellor.
- The academic dress of the Deputy Vice-Chancellors and the Executive Directors is the same as that of the Vice-Chancellor and Principal, except that the colour of the facing and sleeves of the gown and of the cord and tassels of the cap is silver-grey.
- The gown of the President of Convocation is of blue silk, with a broad facing of gold silk down each side, the sleeves being lined with white silk. The cap is the same as that of the Chancellor, but with a blue cord and tassels.
- The Registrar wears a black silk gown with a broad facing of blue silk down each side, bordered with gold braid. The cap is the same as that of the President of Convocation.
- A member of Council wears a black silk gown with a broad facing of gold silk. The cap is the same as that of the Chancellor.
- The gown of the President of the Students' Representative Council is black with a broad facing of blue satin.

## Graduands' Gowns

- The gowns for all degrees of bachelor and master of the University are black, of the same pattern as the gown for a Master of Arts at the University of Oxford.
- The gown for the degree of Doctor of Philosophy is scarlet, after the University of London pattern.
- The gown for a senior doctorate is the same as that for the PhD, but with a gold satin facing on each side of the gown and with the sleeve button and cord in gold.

## The Academic Hood

The academic hood is the principal feature of the costume for holders of our degrees of bachelor and master. The hood for the PhD is standard, regardless of the Faculty in which the degree was obtained. It is scarlet silk, lined with white silk.

## Degree Colours

The hoods reflect the colour or colours of a particular degree or associated degrees.

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## THE UNIVERSITY MACE

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Maces were originally weapons of defence, designed to break through armour. In medieval times, bishops carried a mace instead of a sword into battle to enable them to defend themselves in accordance with the canonical rule that forbade a priest to shed blood. In time, the mace has come to be regarded as a symbol of delegated authority vested in a person or an institution. At this University, it is a symbol of the authority vested in the Chancellor and a reminder of the mandate given by the legislature of this country to the University to grant degrees.

The University mace is the work of the Edinburgh designer, silversmith and engraver, William Kirk, who designed and made the mace of the University of Stirling and of other institutions. It is silver-and gold-plated, is 1070 millimetres long and 180 millimetres broad and weighs seven kilograms. The heraldic devices used in the decoration reflect the character of this University as an institution of learning, set in a mining centre within the Republic of South Africa.

The head of the mace with its spreading vertical blades is symbolic of the horns of a springbok. The central vertical spike is representative of a rock drill on the mine, and the amber stone set in the head is intended as a tribute to a past Chancellor through its association with his name, Bernstein, which in German means amber stone. The heavy quality of the head is consistent with the traditional concept of the mace as a weapon of defence. The collar repeats the shape of the head. It consists of eight cogs which symbolise the cog-wheel in the University coat of arms and represents mining and industry. The shaft is octagonal and divided into three sections. The coat of arms of the University is placed on the shaft under the collar. Below this the words *Universitas Witwatersrandensis Johannesburgi*: are inscribed, followed by the date in Roman numerals – MCMLXXVI (1977) – which signifies the year of the dedication of the mace.

The mace is a symbolic portrayal of this University, this city, the Witwatersrand and the Republic of South Africa. It is a constant reminder to members of Council and Senate to uphold at all times the rights, powers and privileges of the University and its governing bodies.

# EMERGENCY AND FIRE PLANS

## DURING GRADUATIONS

### **1. In the event of an emergency and/or fire:**

- The presiding official (Chancellor/Vice-Chancellor/Deputy Vice-Chancellor) will make an announcement requesting guests, graduands and staff to keep calm and remain seated;
- The Ushers will assist guests to proceed to the nearest Emergency exits in order to evacuate the Great Hall in an orderly fashion;
- Emergency exit signs are visible, in red, above all exit doors situated on your left and right hand sides, as well as the back of the Hall;
- The Ushers will assist the elderly and disabled guests out of the building;
- The academic procession on stage must exit through the back stage door;
- Once outside the Great Hall, all guests, graduands and staff must proceed to the main assembly point on the piazza.

### **2. In the event of a Bomb threat**

All bomb threats will be treated as real in order to protect lives and property and the premises will be evacuated immediately.





# NATIONAL ANTHEM

Nkosi sikelel' iAfrika  
Maluphakanyisw' uphondo lwayo,

Yizwa imithandazo yethu,  
Nkosi sikelela  
Thina lusapho lwayo.

Morena boloka setjhaba sa heso,  
O fedise dintwa le matshwenyeho,  
O se boloke, O se boloke setjhaba sa heso,  
Setjhaba sa, South Afrika — South Afrika.

Uit die blou van onse hemel,  
Uit die diepte van ons see,  
Oor ons ewige gebergtes,  
Waar die kranse antwoord gee,

Sounds the call to come together,  
And united we shall stand,  
Let us live and strive for freedom  
In South Africa our land.

## The Wits Choir

The Wits Choir has been under the direction of conductor and trainer, Dalene Hoogenhout, since 1995. Their repertoire is colourful and vibrant. They perform regularly at graduations and important ceremonies. The Wits Choir has toured internationally as well as playing host to other choirs here. They are also active in the community, undertaking choral outreach programmes.