

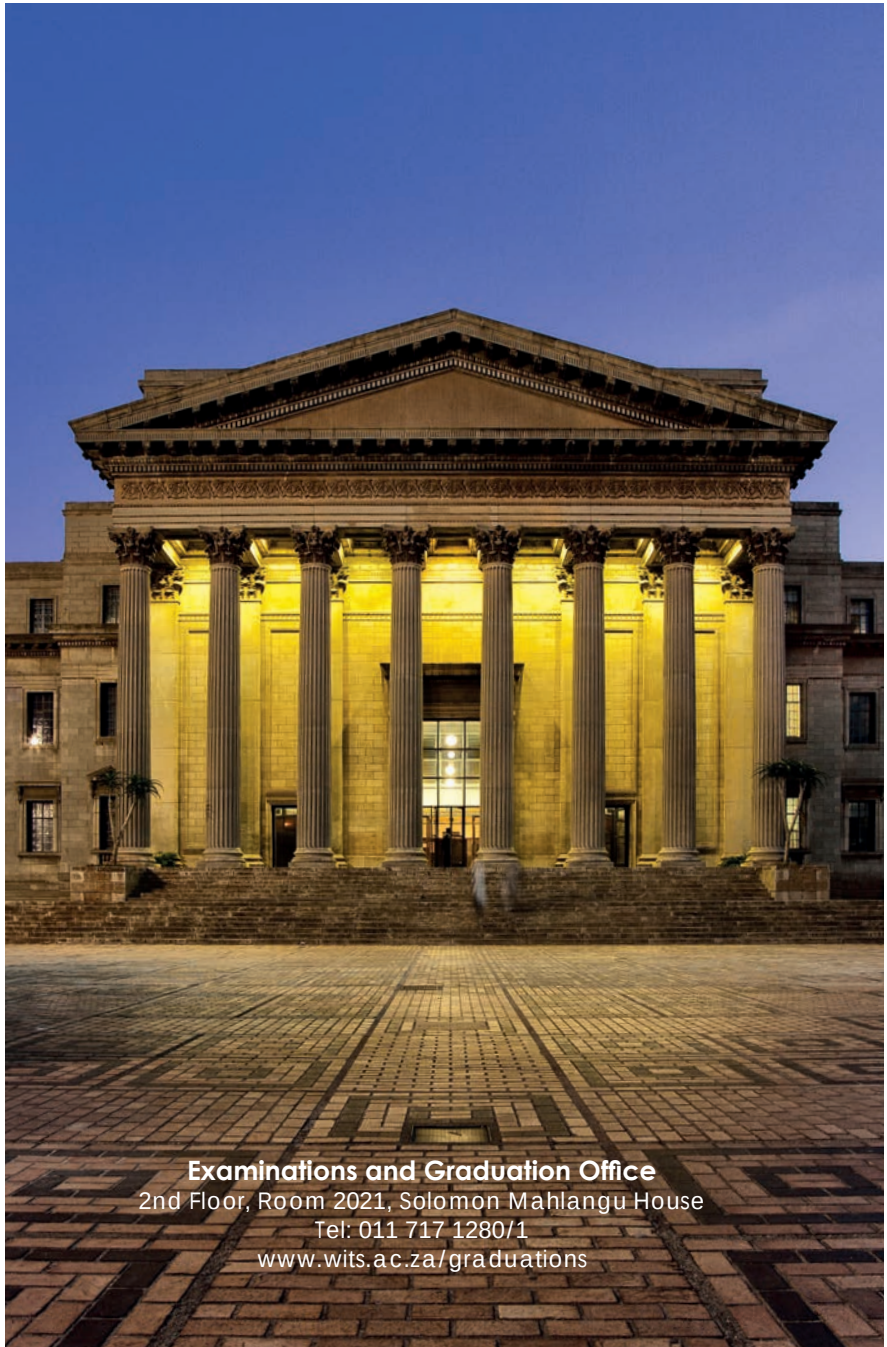


UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

100 1922
2022

PhD
Graduation Ceremony
2023

Venue: The Great Hall
Date: 11 December 2023
Time: 09:30



Examinations and Graduation Office

2nd Floor, Room 2021, Solomon Mahlangu House

Tel: 011 717 1280/1

www.wits.ac.za/graduations

A MESSAGE TO GRADUATES FROM THE CHANCELLOR



A hearty congratulations to the inimitable class of 2023! Your graduation launches the University of the Witwatersrand, into the first year of its second Centenary. This happens at a time when as a country we are experiencing a plethora of challenges that threaten our economic stability and social cohesion, further deepening inequality and hopelessness.

It is in this century that, as one of the member states of the UN that approved the 2030 Agenda for Sustainable Development, we intend to eradicate inequality, achieve peace, prosperity, and dignity for all, through partnerships while preserving the planet for future generations. We cannot achieve these lofty ambitions without your wisdom and servant leadership as you embark on your careers.

Your hard work to reach the pinnacle of your academic achievement, under immense challenges, is a true reflection of your resilience and commitment. It is this resilience that makes us confident that you have what it takes to build a better future that is equal and just. History has proven time and again that 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.

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 are accountable for their actions and omissions, 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 the University of the Witwatersrand, the premier University on the continent.

You are now a member of an elite group of graduates of this august institution. More than 200 000 alumni at the cutting edge of excellence, both locally and internationally in business, the public sector, the academy, and in civil society have trodden this path.

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 Zebon Vilakazi

Vice-Chancellor and Principal
Wits University

MESSAGE FROM 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 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 200 000 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:

<https://www.wits.ac.za/alumni/updateyourdetails/>

Ms Kgomotso Mufamadi

President of Convocation

Wits University



WITS ALUMNI

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.

ORDER OF PROCEDURE

11 DECEMBER 2023 AT 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 and guests

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.

FACULTY OF COMMERCE, LAW AND MANAGEMENT

DEAN: PROFESSOR J COHEN
BCom Hons PhD (Witwatersrand)

Doctor of Philosophy

AMEYIBOR, Leeford Edem Kojo

Graduate School of Business Administration

THESIS: Proximal and distal antecedents of behaviour change maintenance

The study sought to determine the proximal and distal factors of behaviour change maintenance among an understudied population of alcohol quitters. Through quantitative design and methods, the findings contribute to social marketing theory and practice that the ecological system theory can be used to predict Behavioural Change Management through the stages of change model. Results indicate that married former alcoholics are more likely to achieve longevity of sobriety and strong social network ties and situational influence reinforce abstinence.

Supervisor: Dr Y Saini

CROSS, Eunice

Graduate School of Business Administration

THESIS: The entrepreneurial experiences of black African women entrepreneurs in South Africa: the role of compensatory capital

Despite global interest in women's entrepreneurship, a research gap exists for opportunity-driven black African women entrepreneurs. Employing Bourdieu's practice theory, this study examines how these women utilise agency and nurture resources for sustainable, scalable businesses. The life stories of 28 black African women entrepreneurs in South Africa uncover unique attributes cultivated in backgrounds of marginalisation and historic disadvantage, known as compensatory capital. This capital was pivotal in overcoming perceived limitations and promoting success in establishing growth-oriented, impactful businesses.

Supervisors: Dr T Mthanti and Dr M Mzyece

DZAWANDA, Bernard

Economics

THESIS: Railway infrastructure developments and their productivity impact with special reference to institutions in five Southern African development community countries

The thesis investigates determinants and growth impact of rail infrastructure investment in Botswana, Namibia, South Africa, Zambia and Zimbabwe. Rail infrastructure investment is found to be driven by multi-causal economic, geostrategic and institutional factors whose impact depends on the context and time. Results further indicate positive and negative direct and indirect impact of rail infrastructure investment respectively, for Botswana, Namibia, Zambia and Zimbabwe; while for South Africa, the impact is insignificant. These findings provide policy insights on rail infrastructure development.

Supervisors: Dr N Mahonye and Professor J Fedderke

THESIS: Entrepreneurial potential and career choice regret: a focus on switching intention among employees and entrepreneurs in the DRC

This thesis challenges the validity of extant entrepreneurial potential measurement scales on premises of lack of theory integration and clarity originating from “siloeed” approach among scholars. Therefore, the study sets pre-condition for advancing entrepreneurship theory and practice by developing and validating an entrepreneurial potential new scale. Subsequently, the thesis tests, clarifies and extends the regret regulation theory by examining the mediation role of career choice regret in the effect of entrepreneurial potential on career switching intention while considering some moderators.

Supervisor: Dr M Murimbika

THESIS: *Pricing Strategies for SMEs' Success in South Africa: Investigating the Antecedents and Moderators*

This study delves into SME pricing strategies in South Africa, revealing the impact of conditions like competitor and customer relatedness. Notably, value-based pricing stands out as a potent strategy, driving significant market-share, sales, and profitability growth of SMEs. The notions that firm characteristics (age and size) determine pricing strategy performance are challenged in this study. The study underscores the importance of well-defined pricing objectives and capabilities for SMEs to optimize the benefits of pricing strategies.

Supervisor: Dr T Anning

THESIS: Duties of private persons and the right to equality in South Africa

This thesis provides a normative and doctrinal examination of the duties of private persons not to unfairly discriminate in South African law. Locating South Africa's broad approach to private duties in its constitutional endorsement of substantive equality, the thesis argues that private duties differ from those of the state and allow for a wider scope for justification that falls to the courts to determine. It proposes how this might be done under the Promotion of Equality and Prevention of Unfair Discrimination Act, 4 of 2000, which to date has been chronically neglected by litigants and courts.

Supervisor: Professor C Albertyn

THESIS: The role of decentralisation in managing intra-state conflict in South Africa

This research study investigates the imperatives that led to the formation of South Africa's post-apartheid decentralisation and conflict-reduction model. The study finds that despite the model's effectiveness in appeasing the negotiation participants, it was an incomplete arrangement in that it could not contribute to stemming poverty and inequality or empowering local communities. The conclusion is that decentralisation is an eminently political process that is dynamic and elastic in responding to changing times but that its application in conditions of conflict is relative.

Supervisors: Professor A Van Nieuwkerk, Dr C Abrahams and Dr I Sarakinsky

THESIS: Social reproduction, labour markets, and economic change in South Africa: insights from Agincourt

This thesis provides an economic and gendered analysis of the economy of Agincourt, Mpumalanga, an area which remains on South Africa's economic periphery. It shows how households respond to the ways capitalism has changed in the post-apartheid period. It illuminates the important links between labour force participation, and paid and unpaid work. It argues that viewing South Africa's rural areas as sites of the reproduction of labour ignores the highly gendered nature of social reproduction and the labour market.

Supervisor: Professor I Valodia

GOVENDER, Thanusha

Graduate School of Business Administration

THESIS: Determinants of intrapreneurial performance within the banking industry in South Africa

African banks need to reinvent themselves to focus on effectiveness, relevance, and growth by ensuring the establishment of a beyond traditional banking business model. In this study, the levels of corporate entrepreneurship within African Banks domiciled in South Africa were analysed to determine the influence of organisational, individual, and environmental antecedent factors as predictors of corporate entrepreneurial performance. The empirical insights led to crafting an embedment capability model for corporate entrepreneurship that would drive corporate entrepreneurial performance and industry differentiation.

Supervisor: Professor B Urban

KARUITHA, John King'athia

Graduate School of Business Administration

THESIS: Empirical evaluation of the possible impacts of the transformation of microfinance institutions in Africa

This work examines the ramifications of Microfinance Institutions' (MFIs) transformation from the traditional NGO model to the profit-seeking model. Drivers of transformation are: age and size of the MFI; and legal tradition, institutional quality and financial development level of the MFI country. Surprisingly, transformation seems not to enhance MFIs' dual socio-financial objectives or the financial inclusion agenda. Importantly, we need to evolve a financing model that would better support MFIs' necessary socio-financial goals.

Supervisor: Professor K Ojah

KIBUGU, Joseph Nderitu

Law

THESIS: Interrogating the shortcoming of the new alliance for food security and nutrition from human rights perspective

The 'New alliance for food security and nutrition' is an initiative by G8 countries that seeks to improve food security and reduce poverty in several African countries by increasing the involvement of multinational agribusinesses in agricultural value chains. The thesis uses the lens of the international human right to food, to demonstrate that the model's design is flawed. While agribusiness has made significant profits, the model has compromised affected communities' right to adequate food and poverty remains entrenched.

Supervisor: Professor B Meyersfeld

THESIS: The adequacy of data protection regulation in Kenya

This thesis aimed to determine whether the Kenyan Data Protection Act of 2019 (KPDPA) provides 'adequate' legal protection. A novel adequacy framework was created, considering the problems of state surveillance, surveillance capitalism, and the need for effective remedies for data breaches. Privacy theory, the laws of South Africa, and the laws of the European Union informed this new adequacy framework. After weighing up the KPDPA against the new adequacy framework, twenty recommendations for law reform were made.

Supervisor: Professor E Zitzke

THESIS: 5 Brigade atrocities in Zimbabwe: categorising crimes and evaluating the criminal liability of perpetrators under International Law

The candidate's thesis examines the atrocities committed by 5 Brigade of the Zimbabwe National Army in the 1980s and finds that they constitute international crimes of genocide, crimes against humanity and war crimes. It classifies the conflict in Matabeleland under international humanitarian law as a non-international armed conflict. The candidate evaluates the individual criminal responsibility of perpetrators. Finally, he proposes accountability mechanisms to ensure the international legal obligation to investigate, prosecute and punish international crimes.

Supervisor: Dr K Moyo

THESIS: Exploring the social impact of corporate social investment in South Africa

This mixed-methods PhD thesis examines the social ramifications of corporate social investment (CSI) in South Africa. Employing critical systems heuristics as the theoretical lens, it scrutinises the underlying structures and power dynamics influencing CSI practices. Through quantitative surveys and qualitative semi-structured interviews, this research aims to provide a comprehensive understanding of CSI's effectiveness in addressing societal challenges, offering valuable insights for both corporate strategies and socio-economic development in the South African context.

Supervisors: Dr B Moyo and Dr A Fowler

THESIS: Procedural access to justice: enhancing access to the superior courts of Zimbabwe through reform of selected rules of civil procedure

The thesis, through a critical analysis of security costs, leave to appeal, appeals, and referral of constitutional cases in the Zimbabwean Superior Courts, demonstrates that civil procedures, if not drafted properly, can restrict access to justice. The thesis draws lessons from South Africa, other African adversarial legal systems, international law, and conventions on reforming procedural access to justice thereby providing an indigenous system of rules and procedures uniquely suitable to the Zimbabwean legal system.

Supervisor: Professor C Theophilopoulos

THESIS: Effects of intrinsic and extrinsic motivation on successful problem-solving across distinct forms of crowdsourcing

This thesis applies a mixed-methods research design, incorporating qualitative and quantitative approaches, to investigate how intrinsic and extrinsic motivations contribute differently to the achievement of individual-level outcomes, across different types of crowdsourcing. The study makes novel contributions to theory and practice regarding how to achieve economies of scale in human problem-solving across different contexts of crowdsourcing.

Supervisor: Professor C Callaghan

THESIS: The development of an AI adoption framework for food retail marketing in South Africa

This study investigated the impact of Artificial Intelligence (AI) on marketing strategy outcomes in the South African food retail industry. Drawing on diverse innovation and productivity paradox theories, the study identified AI adoption determinants and examined major AI technologies used by food retailers. Results show that AI adoption enhances marketing mix components and is moderated by competition intensity. The study contributes to the development of an AI adoption framework, providing practical recommendations for improving sales, ROI, profit, and market share.

Supervisor: Dr F Saruchera

THESIS: Making sense of employee ownership: an institutional logics perspective

This grounded theory study explores how individuals experience employee ownership within two organisations that have implemented share-ownership schemes to address the persistently elevated levels of inequality in South Africa. An institutional logics interpretation reveals the influence of contexts on individuals' sensemaking of their dual role as employee and owner. The study proposes the integration of ownership into the individual's work experience as an individual, temporal, situational process, and a model for the institutionalisation of employee ownership in the workplace.

Supervisor: Professor T Carmichael

THESIS: The intersectionality of race, location and generations as difference to generations

This qualitative case study explored the intersectionality of social generations, space, place, and race in diversity management in South Africa, along with the workplace implications of intra-generational differences. As a contribution to diversity management studies, the study introduces the term 'placial planning', which entails socially re-engineering workplace ambience so that Black and White South Africans from different social generations can have consistently de-racialised workplace experiences.

Supervisor: Professor T Carmichael

THESIS: The role of leadership in driving digital transformation in the South African financial services sector

The purpose of the research is to provide an all-encompassing definition of Digital Transformation (DT) amid a sea of definitions and propose drivers that leaders operating in the South African Financial Services Sector can use to drive Digital Transformation within their respective organizations, not only as a mere project but also by being mindful of the personal influence their role as leaders has on the success of a DT process.

Supervisor: Dr J Gobind

THESIS: Organisational culture, continuous improvement, and environmental performance in South African ISO 14001 certified organisations

This thesis investigates the link between organisational culture, innovation, and organisational environmental performance, with a focus on South African ISO 14001-certified organisations. Theoretical predictions of Hofstede's Cultural Dimensions Theory, the Competing Values Framework, and Schwartz's value theory are tested empirically. Findings advance theory and practice, identifying how organisational culture and individual values contribute to important organisational and individual outcomes.

Supervisor: Professor C Callaghan

THESIS: Healthcare financing and its effects on the equity of healthcare systems and universal coverage in Sub-Saharan Africa

This study examined financing and risk mitigation of healthcare systems and the equity of these systems in Sub-Saharan Africa (SSA), with equity proxied by health outcomes, instead of the often-used penultimate 'access to healthcare'. It finds that financing via domestic private payments enhances health outcomes, whilst domestic public payments do not. Increasing healthcare budgetary allocation without cannibalizing other health-related allocations enhances health equity. And financial pooling emerges as the most promising risk-mitigation mechanism for health systems in SSA than other methods.

Supervisor: Professor K Ojah

THESIS: Motivations for Individual giving among Ghanaians

Using Self Determination Theory, this mixed methods study finds that age, household size and gender are key demographic factors while financial constraints, egoism, social norms and religion among others are significant attitudinal and behavioural factors that motivate giving among Ghanaians.

Supervisor: Dr B Moyo

RALIPHADA, Nditsheni Jennifer

Graduate School of Business Administration

THESIS: Learning transfer among Generation Y entrepreneurs in the South African manufacturing sector

Because South Africa has one of the highest unemployment levels in the world among youth, this study undertook to establish a theory about knowledge and learning transfer among Generation Y entrepreneurs in the South African manufacturing sector. The grounded theory study established that the core concern of these entrepreneurs is to "stay afloat" and that they do this predominantly through relationships with a wide range of stakeholders. The Relational Learning Transfer Theory was proposed as the main finding.

Supervisor: Professor T Carmichael

RAMHIT, Ketan Sharma

Business Science

THESIS: Organisational culture, values and performance in multinational companies in Mauritius

This thesis applies a mixed method design to investigate relationships between organisational culture, individual values, and individual performance in multinational companies in Mauritius. Findings suggest how individual values contribute to individual performance in this context. A theoretical model is derived and tested, contributing novel insights for theory and practice in this island state context.

Supervisor: Professor C Callaghan

SHANDU, Philani

Graduate School of Business Administration

THESIS: A series of experimental analyses into the Disposition Effect and its manifestations among South African investor teams

Set within the context of the behavioural finance research field, this thesis explores the causal effects of a set of psycho-social, public health-related, and socio-economic factors on the Disposition Effect among South African student investor teams participating in the annual Johannesburg Stock Exchange Investment Challenge. Across its three natural-field experimentation studies, the thesis introduces to the literature several new insights on the nature, dynamics and consequences of the Disposition Effect that relate to investor teams located both in Africa and beyond.

Supervisor: Professor P Alagidede

SIBANDA, Tonderai Gilbert

Graduate School of Business Administration

THESIS: Antecedents and consequences of online customer brand engagement in business-to-business in an emerging market

A gap existed to understand the antecedents and consequences of online customer brand engagement (CBE) in the business-to-business (B2B) industry. To study CBE quantitative methodology was used. The research results indicate that brand love and CBE are distinct constructs. A model of online CBE was developed, and it can be used in different contexts. The managerial implication is that brand managers can use online CBE to positively influence loyalty, brand advocacy, brand preference and purchase intention.

Supervisor: Dr Y Saini

FACULTY OF

ENGINEERING AND THE BUILT ENVIRONMENT

DEAN: PROFESSOR T MAJOZI

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

Doctor of Philosophy

ACHARI, Shamin

School of Electrical and Information Engineering

THESIS: Markov modelling and error-correcting techniques for insertion-deletion-substitution channels with memory

In this pioneering PhD thesis, the author addresses the challenging and timely issue of insertion and deletion error correction. The thesis introduces an innovative data communication channel model rooted in finite-state Markov channels, accounting for their memory effects. Building upon this model, the author develops novel error-correcting code constructions and decoding algorithms, meticulously validating their capabilities, limitations, and practical guidelines.

Supervisor: Professor L Cheng

ANEKWE, Ifeanyi Michael

School of Chemical and Metallurgical Engineering

THESIS: Catalytic conversion of Low Alcohols to Olefins and their Oligomers

Synthesised catalysts were applied in the conversion of alcohols. The catalysts were active in alcohol conversion. Selectivity to various petrochemicals is tuneable as a function of operating parameters. The in-house catalyst thus offers a potential tool towards transformation of biomass derived alcohols to value added products. A promising route to bioeconomy and Just Energy Transition.

Supervisors: Professor Y Isa and Professor B Oboirien

AUDU, Waheed Moses

School of Electrical and Information Engineering

THESIS: Channel estimation and signal detection in hardware impaired millimeter wave (MM WAVE) massive MIMO systems

Millimeter wave (mmwave) communication has been identified as one of the key technologies for the fifth generation (5G) and beyond 5G wireless communication networks. The candidate's PhD research focused on the development of signal processing techniques for hardware Impaired mmwave massive multiple input multiple output (MIMO) wireless communication systems. The candidate developed some novel channel estimation and signal detection techniques for the wireless communication systems.

Supervisor: Professor O Oyerinde

THESIS: The challenges and practices of delivering public housing through instruments in local government. The case of officials' practices around the housing waiting list in Bulawayo, Zimbabwe

The thesis utilises policy instrumentation approach/ housing waiting list to unpack the challenges and practices of parcelling low-cost land for housing in urban Zimbabwe. A qualitative case study of Cowdray Park, Bulawayo, demonstrated how a clumsy and opaque housing waiting list enable political decisions, gestures and practices to permeate the allocation of land for public housing thus affecting the poor.

Supervisor: Professor A Karam

THESIS: Deterioration of reinforced concrete structures due to combined action of chloride-induced steel corrosion and alkali-silica reaction

The study empirically demonstrated that premature deterioration of reinforced concrete structures in coastal environments is exacerbated in cases where both corrosion of the reinforcing steel and alkali-silica reaction manifest. The net effect is that the functional life of such structures is significantly shortened, ultimately resulting in missed targets on carbon emission reduction and increased maintenance costs.

Supervisor: Professor M Otieno

THESIS: Development of Ti-based alloys for dental applications

For better dental alloys, beta-type titanium alloys with nontoxic elements were designed with 5 weight % copper for antimicrobial properties (since bacteria cause dental implant failures) and 0.1 wt% ruthenium for improved corrosion resistance (since corroded surfaces are easier for bacteria to grow). Several alloys were made, studied with scanning electron microscopy and X-ray diffraction, then subjected to corrosion, compression and antimicrobial testing. The titanium-15 molybdenum-10 tantalum-5 copper - 0.1 ruthenium (weight percent) was the best alloy, with the lowest corrosion rate and showed antibacterial resistance. Titanium-copper alloys were also studied separately to correct the phase diagram.

Supervisor: Professor L Cornish

THESIS: Geometric optimal control of unmanned aerial vehicle with payload variation condition and rendezvous collaboration with moving unmanned ground vehicle

Unmanned Aerial Vehicles and Unmanned Ground Vehicles are used in critical applications for instance in the delivery of food supplies and medicines. In this research work, Unmanned aerial vehicles are working cooperatively with unmanned ground vehicles to aid in the automatic control of the ground vehicle. This work is formulated within the framework of optimal control using a differential geometric approach.

Supervisor: Dr O Nyandoro

THESIS: The suitability of South African coal discard for the production of carbon-based building composite

This research established a transition of coal beyond power generation by repurposing coal discard as raw material for building components in the construction industry. Composites made from South African coal and preceramic polymer in this study exceeded the requirements for conventional ceramic, bricks, clay roof tiles, etc.

Supervisor: Dr S Bada

THESIS: Emission reduction strategy for internal combustion engines using promoted catalyst

Motor vehicles are propelled by the combustion of fuels but atmospheric pollution poses a challenge. This work proposes using coal fly ash as raw material to synthesize an FAU zeolite to reduce the level of N₂ at the pre-combustion stage, and also the use of UV energy for CO₂ utilization at the post-combustion stage and offers a solution to air pollution from automobile emissions.

Supervisors: Professor D Nkazi and Professor J Van Der Merwe

THESIS: Understanding place as process in the habitation of marginal and disaster-prone urban land: two Informal Settlements in Blantyre City, Malawi

This thesis aimed to understand how the concept of place as process is reflected in the making of habitable places on marginal, disaster-prone land in Blantyre City, Malawi. The ethnographic study found residents' intricate efforts and every day activities resulting in place attachment, in turn allowing their aspirations to be achieved on sites dismissed in formal planning.

Supervisors: Professor M Huchzermeyer and Professor A Karam

THESIS: Why do equity oriented, 'progressive' planning policies fail to redress the apartheid city? An examination of Planning Instrumentality in South Africa

The thesis explored three case studies of potentially progressive planning instruments at different stages of the policy process, revealing actual state practices and how they are shaped. It found that multiple factors affect their efficacy, including complex governance structures, weak institutional capacities, diverse ideologies, conflicting rationalities, outsourcing, risk aversion, and individual perceptions and actions.

Supervisors: Professor C Benit-Gbaffou and Professor A Todes

MAGEGE, Simbarashe Rodwell

*School of Chemical and
Metallurgical Engineering*

THESIS: Design, synthesis & optimisation heat-integrated multipurpose batch plants: consideration of intermittently available continuous streams

This work proposes a novel mathematical formulation for the simultaneous design, scheduling and heat integration of multipurpose batch plants using a continuous-time framework. A rigorous stream-task-oriented scheduling formulation is presented, which enables explicit description of the movements of the intermittently available process streams. This thorough treatment of streams unlocks more degrees of freedom than realised in previous stream heat integration formulations. Comparison of performance with traditional sequential approaches in literature show that this formulation yields better results in much shorter solution times.

Supervisor: Prof T Majozi

MBADUGHA, Lynda Chinwendu

*School of Construction
Economics and Management*

THESIS: Integrated design methodology for construction waste prevention

Arriving with co-authored articles and a book chapter, the candidate completed a ground-breaking thesis, using the adaptation concept to develop a novel methodological framework for implementing construction waste prevention at the design stage.

Supervisors: Professor A Ozumba and Dr W Shakantu

MOYO, Langa Bright

*School of Chemical and
Metallurgical Engineering*

THESIS: Recovering nutrients from wastewater using ferrochrome slag as a magnesium source for struvite crystallization

In his study, the candidate investigated the feasibility of recovering magnesium from ferrochrome slag and, thereafter, use it for struvite precipitation.

Supervisor: Professor GS Simate

NELSON, Ebitei Sintei

School of Chemical and Metallurgical Engineering

THESIS: Production and upgrading of empty palm fruit bunch derived bio-oil for transportation fuel and biobased chemicals

In this thesis, Production and Upgrading of Empty Palm Fruit Bunch Derived Bio-oil for Transportation Fuel and Bio-based Chemicals, the candidate generated bio-oil from empty palm fruit bunch and upgraded the bio-oil to infrastructure-compatible transportation fuel, blended with neat petrol and successfully tested the performance in an internal combustion petrol engine. This research contributes to knowledge by advancing the production of green fuel; the discovery of the blended fuel, which is rich for transportation fuel.

Supervisors: Professor S Iyuke, Professor M Daramola and Dr A Okewale

THESIS: An extended and revised feedback linearisation approach with a special focus on a linear direct current machine trolley

The revised feedback linearisation approach is presented and utilised on a multi faceted haulage trolley system powered by a linear DC machine. The results show that the new novel linearising-approach works efficiently from a computational/mathematical and geometric differential manifolded upgrade perspective and also provides high precision results for feedback linearisation applicability, efficacy, and outputs guarantees.

Supervisor: Dr O Nyandoro

THESIS: An investigation on the integration of Construction Project Supply Chain using Blockchain Technology: a UTAUT model perspective

Worried about a steady stream of unsatisfactory situations in the construction industry, the study developed a Blockchain-driven model to facilitate provenance within construction procurement. In order to mitigate fronting and impersonation, delays in payments, bid rigging, quality compromise, unnecessary claims, and the inability to document a project's lifecycle history, a modified UTAUT model is developed.

Supervisors: Professor D Root and Dr N Khatleli

THESIS: Lightweight concrete made using end-of-life electrical and electronic plastic as aggregate

This study evaluated the microstructure, mechanical strength, and durability performance of concrete produced using acrylonitrile butadiene styrene (ABS) derived from waste electrical and electronic equipment as aggregate aiming to recycle this waste plastic effectively. The study focused particularly on the microstructural development of the Interfacial Transition Zone (ITZ), which strongly determined the application performances. The findings shed new light on the utilization of ABS in concrete manufacture and usage.

Supervisor: Professor S Nwaubani

THESIS: A directed acyclic graph integrated approach for nonlinear airline fleet assignment and aircraft routing

The candidate's PhD suggests a mathematical model for airline scheduling. He used the directed acyclic graph as a modelling tool for deriving this non-linear model. A key benefit is that the model easily allows individual aircraft's parking and maintenance scheduling. Being the first non-linear model, it can be used as a springboard for further research.

Supervisor: Professor M Ali

THESIS: Joint optimisation of spectrum sensing and sharing in distributed cognitive radio networks

In this pioneering PhD thesis, the author addresses the challenge of spectrum access in the era of increasing communication device demands. The dissertation introduces a novel model for joint spectrum sensing and sharing using a Potential Game approach. It incorporates the concept of Sensing Detection Threshold to Noise Variance Ratio (TNR) and Multi-agent Reinforcement Learning (MARL) to enable optimal channel selection and access policies in distributed Cognitive Radio networks. The study's findings hold significant promise for enhancing spectrum utilization and minimizing interference with primary users. Supervisors: Professor L Cheng and Dr A Mahmood

THESIS: Memories of futures-past and visions of future-futures. Liminality through gamification of backcasting in sustainable city transitioning for African Cities

Urgency towards sustainable city transitioning for African cities calls for backcasting desirable city futures. Based on gamification and metaphorizing of architect's process into backcasting, Ubuntu Chess enhanced participants' liminality towards co-envisioning desirable futures for Marlboro Gautrain Station Precinct case study. The study also finds that futurity and liminality in architecture could leverage mental-time-travel insights from neurophenomenology.

Supervisor: Professor D Irurah

FACULTY OF HEALTH SCIENCES

DEAN: PROFESSOR SA MADHI

MBBCh MMed PhD (Witwatersrand) FCPaed(SA) MASSAf, RSSAf, TWAS, CBE

Doctor of Philosophy

ABDULKADIR, Abdurrahman

Anatomical Sciences

THESIS: Morphological changes in the lungs and air sacs of the Japanese quail (*Coturnix japonica*) exposed to heat stress

Japanese quail farming is an alternative to chicken especially in hot Sub-Saharan Africa where heat lead to significant economic loss in chicken farms. This study explored how heat stress affects the lungs in the Japanese quail to help improve its welfare and husbandry. The lungs are the gateway to the survival of the small bird because every organ depends on it for oxygen. The outcome of this study indicated that the Japanese quail can survive high temperature better than chicken.

Supervisor: Dr D Reddy

ARIJE, Olujide Olusesan

Public Health

THESIS: Quality of care and stated preferences in sexual and reproductive health services for adolescents and young people in Southwest Nigeria

In the context of increasing policy attention to adolescent sexual and reproductive health (ASRH), understanding user preferences and care quality is paramount. This study evaluated ASRH service delivery in Ogun State, Nigeria, through key informant interviews, mystery client evaluations, focus group discussions, and discrete choice experiment. Results pinpointed the need for greater health worker competence, and preference for attractive facilities and reduced wait times, offering valuable insights for refining ASRH services in Nigeria and beyond.

Supervisors: Professor J Madan and Dr T Hlungwani

BEESHAM, Ivana

Obstetrics & Gynaecology

THESIS: An evaluation of the integration of oral pre-exposure prophylaxis (PrEP) as standard of care for HIV prevention in clinical trials in South Africa

This thesis sought to explore the integration of oral pre-exposure prophylaxis (PrEP) as part of the HIV prevention package in clinical trials in South Africa. One of the key findings from this study was that it was possible to successfully integrate oral PrEP as standard of care for HIV prevention in a large multi-centre HIV endpoint-driven trial. Insights are also provided on participants experiences using PrEP, patterns of PrEP use, PrEP adherence and persistence, and post-trial PrEP access.

Supervisors: Professor M Bekinska and Dr L Mansoor

THESIS: A framework for the education of occupational therapists in vocational rehabilitation as part of the first professional degree

In her thesis, the candidate developed a flexible guideline using three data sets, namely, curriculum-related documents, perspectives of occupational therapy educators, and input from graduates. The proposed framework integrates seven curricular components and offers a novel approach to curriculum development. Its adoption by educators will significantly enhance the preparation of occupational therapists in effectively facilitating work engagement of people with disabilities.

Supervisors: Dr TR van der Merwe and Professor P De Witt

THESIS: A programme to support the development of ultrasound skills for midwives practicing in primary healthcare facilities in Gauteng

Antenatal ultrasound provides important and valuable information on maternal and foetal wellbeing and contributes to reducing maternal and neonatal mortality and morbidity. It addresses the sustainable development goal three target which aims to 'ensure healthy lives and promotes wellbeing for all at all ages'. An ultrasound training programme was developed for midwives to increase the availability of this service and to address the unequal access of this service for patients dependent on the public health sector in South Africa.

Supervisor: Dr S Armstrong

THESIS: Classification of occupational injuries in South African Game Parks and Nature Reserves using Machine Learning: support available for injured Kruger National Park employees

In this thesis, the epidemiology and classification of occupational injuries in the South African Game Parks and Nature Reserves were investigated. The results unveiled gender and provincial patterns in injury types. Machine Learning models predicted lower extremity injuries and highlighted the importance of anticipating support for injured Kruger National Park employees. These insights emphasize the potential for targeted safety measures and focus on organisational location. Future research should explore various work-related factors influencing occupational injuries, providing valuable guidance for injury prevention.

Supervisors: Dr J Kagura and Professor A Stewart

THESIS: Characterization of secreted and surface immunodominant antigens of pathogenic yeast *Candida parapsilosis*

This thesis characterised the cell wall and secreted proteins of *Candida parapsilosis* and evaluated their protective potential for vaccine development using a murine model. *C. parapsilosis* is an emerging healthcare concern among immunocompromised patients and underweight neonates in South African hospitals. The study showed that the cell wall and secreted proteins could protect mice from *C. parapsilosis* infection.

Supervisors: Associate Professor A Ahmad and Dr A Khan

THESIS: Euthanasia and physician-assisted suicide in South Africa: towards an ethico-legal framework to assist medical practitioners with end-of-life decision-making

This study investigated South Africa's ethical and legal environment on end-of-life choices and the role of medical practitioners, as well as foreign jurisdictions that offer euthanasia and physician-assisted suicide, to propose an ethico-legal framework to assist South African doctors with end-of-life decision-making. In foreign countries, 'hastened death' has been 'medicalised' as an end-of-life healthcare model. Applying law and philosophical theories to solve bioethical dilemmas, an alternative model is offered using nongovernmental organisations combined with legislation, improved universal access and effective palliative health care.

Supervisors: Dr A Egan and Professor A Dhai

HARPER, Abigail Joan

Public Health

THESIS: The relationship between antenatal food insecurity, depression and birthweight and stunting: results from the National Income Dynamics Study (NIDS)

Maternal hypertension (a consequence of poor diet quality) was associated with low birthweight. Food expenditure below the Stats SA poverty line and low dietary diversity was associated with stunting among children. Food insecurity significantly increased the likelihood of maternal depression. Interventions to reduce food insecurity and improve maternal and household nutrition may reduce the risk of childhood stunting and improve maternal mental health. The inclusion of dietary diversity indicators in national surveys could improve food security monitoring and evaluation.

Supervisors: Associate Professor S Mall, Dr E Chirwa and Professor A Rothberg

HAYAT, Mahtaab

Human Genetics

THESIS: The contribution of common genetic variants to breast cancer risk in South African black populations

Little is known about the contribution of common genetic variants to breast cancer in continental Africa. This thesis reports the first genome-wide association study of breast cancer in women of African ancestry in South Africa. Strong evidence of association was detected in two genes not previously associated with breast cancer risk. The results suggest the existence of African-specific genetic risk factors for breast cancer and that genome-wide studies in African populations are essential to understand breast cancer genetics in Africa.

Supervisors: Professor C Mathew, Professor M Ramsay and Dr J Brandenburg

HOVE, Jennifer

Public Health

THESIS: Community participation in health system strengthening: co-production of local evidence to influence action for health improvement in rural South Africa

This thesis focused on community participation in health system strengthening. Using participatory action research, local stakeholders, government departments, and NGOs were engaged to address lack of safe water, a community-nominated health priority. Together, they generated local evidence, identified causes, impacts, and developed an action plan. This collaborative approach created safe spaces for dialogue, fostering mutual understanding and empowerment. The research highlights the importance of involving marginalized communities in research and tailoring interventions to their unique needs, ultimately promoting equity and culturally appropriate healthcare access.

Supervisors: Professor K Kahn, Dr R Twine and Dr L D'Ambruoso

THESIS: Nutrition of ageing black South African women and correlates with anthropometry and cardiometabolic outcomes

This study explored nutrient patterns associated to obesity and blood pressure in black middle-aged African females. Nutrient patterns remained the same at baseline and 5-year follow-up. The animal-driven nutrient pattern was associated with increases in body fat at baseline and at follow-up. This pattern remained significantly associated with fat mass index, lean mass index and visceral adipose tissue. Furthermore, this study found that body mass index did not mediate the relationship between blood pressure and any of the nutrient patterns.

Supervisors: Associate Professor P Gradidge, Dr T Chikowore and Professor S Norris

KARIMI, Kellen Joyce

Microbiology

THESIS: Investigation of contamination of community groundwater sources with antibiotics in informal settlements in Kisumu, Kenya

This thesis examined antibiotic contamination in groundwater, as well as risks to human health from exposure through drinking water. Left over antibiotics were disposed of in pit latrines, compost pits, and burning, all of which are likely to contaminate groundwater, and affect vulnerable populations with compromised immunity. The study advocates for inclusion of safe antibiotic prescription instruction in medical training for all cadres to combat the growing problem of the little known likely environmentally induced antibiotic resistance caused by abuse and improper disposal.

Supervisors: Associate Professor A Ahmad, Professor A Dusé and Professor M Mwanthi

KERETETSE, Goitsewang Salvation

Public Health

THESIS: Occupational exposure to chemicals, and health outcomes, among nail technicians in Johannesburg, South Africa

This thesis assessed the exposure of nail technicians to chemicals emitted from nail products. The study quantified volatile organic compounds (VOCs) exposure and presented health effects experienced by nail technicians. The main contributing VOCs were linked to the type of nail treatment conducted. Carcinogenic and non-carcinogenic thresholds for certain VOCs were exceeded, indicating unacceptable risk. This study is useful for developing intervention strategies to minimise exposure and inform policy development to regulate these industries and ensure worker health and safety.

Supervisors: Associate Professor G Nelson and Professor D Brouwer

KORSAH, Emmanuel Kwame

Nursing Education

THESIS: Development of an instrument to measure the quality of care after the withdrawal of life-sustaining treatment in the adult intensive care unit

In South Africa, the quality of care afforded to critically ill and dying patients and their families has been plagued with inconsistencies, ethical dilemmas, and cultural and religious differences. The study used an exploratory sequential mixed method to develop and conduct initial validation of an instrument to measure the quality of care provided for patients and their families after the withdrawal of life-sustaining treatment in the adult intensive care unit. The final instrument consisted of 64 items across 7 domains.

Supervisor: Associate Professor S Schmollgruber

THESIS: Preventing coal mine dust lung disease: application of Bayesian Hierarchical Framework for Occupational Exposure Assessment in the South African Coal Mining Industry

The South African government requires mining companies to conduct regular exposure assessments to prevent the development of diseases. Assigning the average coal dust exposure of a sample from so-called homogenous exposure groups (HEGs) to the group has the potential to underestimate overexposure risk. This research showed that within HEG, the subgrouping by job titles improves the identification of high-exposed workers. The study also demonstrates that historical data can be used to explore current overexposure risk even with small sample sizes, improving cost-effectiveness.

Supervisors: Professor D Brouwer, Professor J Lavoue and Professor N Kandala

THESIS: Social support and sexual health among very young adolescent girls in two districts in Malawi: a narrative inquiry

This thesis explored how VYA girls (aged 10-14) experience the use of different forms of social support within their social contexts to address their sexual health needs in rural Malawi. The study used a narrative inquiry to identify social-contextual factors affecting social support experiences and sexual health knowledge acquisition processes among very young adolescents in rural Malawi. It suggests that providing accurate sexual health information can address limitations in reaching very young adolescents and enhance their SH knowledge acquisition and positive behaviour change.

Supervisors: Dr M Kamndaya and Dr Y Sikweyiya

THESIS: Facial characteristics and determinants of respirator fit among industrial workers in Gauteng

The study evaluated the suitability of the commonly used USA and Chinese respirator fit test panels (RFTPs) in designing and testing filtering facepiece respirators (disposable) for Black South Africans. After describing the lack of representation of Black South Africans on these two panels, this study used the collected facial dimension measurements to develop new appropriate RFTPs for the user population and identified critical factors influencing the fit of these respirators. Future research studies will validate the newly developed panels.

Supervisors: Dr K Wilson and Emeritus Professor D Rees

THESIS: Design of a Dual Thermo-and Glucose-Responsive Injectable Hydrogel for the Treatment of Diabetes Mellitus

This thesis successfully outlines the design, synthesis, in vitro assessment, and in vivo performance of a Chitosan-Pluronic-ConA Hydrogel for insulin delivery. The hydrogel is distinctive for its ability to respond to insulin deficiencies by utilizing body temperature and glucose levels. It has contributed significantly to pharmaceutical sciences, particularly in the realm of polymer-based applications for advanced hydrogel insulin delivery systems. This research addresses a pressing public health issue, relevant not only in South Africa but also on a global scale.

Supervisors: Associate Professor P Kondiah, Professor Y Choonara and the late Professor V Pillay

THESIS: Examining the role of affordability, citizen engagement, and social solidarity in determining health insurance coverage in Kenya

The researcher explored the role of affordability, citizen engagement and social solidarity in determining national health insurance coverage among informal workers in Kenya. The study found that coverage was low and inequitable among these households leaving them vulnerable to catastrophic spending on healthcare costs. This research also highlighted the importance of citizen engagement and solidarity in increasing awareness, enrolment, and member satisfaction in health insurance while ensuring citizen voice is incorporated in the formulation of health insurance policies.

Supervisors: Professor J Goudge and Dr A Koon

MAYIMELE, Nsovo Nyeleti

Pharmacy and Pharmacology

THESIS: Pharmacists in the strategic leadership of manufacturing pharmaceutical companies in South Africa

The thesis found a limited presence of pharmacists in the strategic leadership of manufacturing pharmaceutical companies with operations in South Africa. Pharmacists were described as patient-oriented medicine experts who were not leading at the strategic levels of companies due to the diversity of skills required to head pharmaceutical corporations. The roles of pharmacists in manufacturing pharmaceutical companies were found to be essential and extended beyond operational levels to benefit patients, who are the end-users of pharmaceutical products.

Supervisors: Professor PH Demana and Dr M Keele

MDODA, Bayanda

Physiology

THESIS: Effects of supplemental zingerone on cobb 500 broiler chicken (*Gallus gallus domesticus*) growth performance, health and meat quality

This study evaluated the potential of zingerone, one of the major active compounds in ginger, as an alternative growth-promoting feed supplement to zinc bacitracin in broiler chicken feeds by specifically determining its effects on the growth performance, feed use economy, flock general health and product quality. Zingerone, as a dietary supplement in broiler chicken diets, can potentially replace zinc bacitracin without altering growth performance, feed utilisation efficiency, meat physical and nutrient profile and perturbing health profile of broiler chickens.

Supervisors: Dr B Lembede, Associate and Professor E Chivandi

MENSAH BONSU, Isaac

Physiotherapy

THESIS: Exercise in Ghanaian, postmenopausal women with an increased Body Mass Index (BMI), above 25 kg/m²

Excess weight is a pervasive global epidemic and a threat to public health. This condition (excess weight) is prevalent among postmenopausal women. This thesis investigated postmenopausal women with excess body weight and identified contributing factors associated with weight gain in postmenopausal women in Ghana. The experiences of postmenopausal women with excess weight, barriers and facilitators to health promotion programmes were explored. Hence, a culturally adapted exercise-based programme was developed, validated, and tested to manage excess weight in Ghanaian postmenopausal women.

Supervisors: Dr A Ajidahun, Associate Professor C Brandt and Professor H Myezwa

THESIS: Role of novel biomarkers in prediction of chronic kidney disease progression, end stage kidney disease and death among black chronic kidney disease patients in South Africa.

Chronic kidney disease (CKD) can rapidly and insidiously progress to kidney failure in impoverished environments, thus early recognition of likely progressors is important. A prospective longitudinal study was conducted on CKD patients of black ethnicity at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), from September 2019 to March 2022. There was a higher prevalence of CKD progression, together with lower baseline concentrations of serum TGF- β 1 (the master cytokine in kidney inflammation and fibrosis) and increased urinary TGF- β 3 in the progressors.

Supervisors: Dr C Dickens, Associate Professor R Duarte, Associate Professor G Paget and Professor N Naicker

THESIS: Central arterial pressure effects of heart rate variation

The researcher investigated the mechanisms of the inverse relationship between heart rate and central pulse pressure. Her studies which were published in the journals, Hypertension, American Journal of Hypertension and Frontiers in Cardiovascular Medicine, established that backward pressure waves are the primary contributors to elevations in central pressures with reductions in heart rate, and identified that age and increased vascular stiffness are risk factors. With this knowledge doctors can identify in which patients heart rate lowering medications can be safely used.

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

THESIS: Development and pilot testing of a health educational programme for adolescents living with HIV

In Rundu, Namibia, this study developed and pilot-tested the effectiveness of an educational program to enhance knowledge on HIV and ART treatment among adolescents living with HIV. Using multi-method approach the study found limited understanding of the HIV disease process, a lower level of ART treatment literacy and disease management among adolescents. The program improved their knowledge on HIV and ART treatment from 33.0% to 76.0% post-test, which was statistically significant. Structured health education program is associated with improved knowledge of HIV and ART treatment among adolescents.

Supervisors: Associate Professor S Schmollgruber and Dr N Klaas

THESIS: Development and pilot testing of an educational supportive program for persons with end-stage renal disease on hemodialysis in Rwanda

The researcher conducted a sequential multimethod study directed in six phases. The purpose was to develop, validate and pilot test an educational support program for patients with end-stage renal disease on haemodialysis in Rwanda. The educational support program helped patients to improve their quality of life and adherence to haemodialysis treatment.

Supervisors: Dr A Tshabalala and Professor J Maree

THESIS: Occupational exposure to chrysotile asbestos in the chrysotile asbestos cement manufacturing industry in Zimbabwe

This study examined trends in personal chrysotile asbestos fibre concentrations for the period 1996-2020 and predict asbestos related diseases (ARDs). Exposure concentrations decreased over the years with higher exposure concentrations exhibited before 2008 compared to the latter years. Despite the trend, a prediction model showed that some jobs in the ACM industry carry risk of ARDs. The study aids in future epidemiological studies and provides a basis for deeper analysis of exposure-response relationships in the chrysotile industry in Zimbabwe.

Supervisors: Professor D Brouwer and Dr D Moyo

THESIS: Prevalence of hypertension, chronic kidney disease and associated risk factors in early adulthood: a cohort study in an urban black South African population

South Africa has an increasing prevalence of non-communicable diseases, including hypertension and chronic kidney disease. This thesis determined the prevalence of elevated blood pressure in young adults in the Birth to 30 cohort, Soweto, Johannesburg. Associations with early life risk factors, blood pressure trajectories and chronic kidney disease were examined. Prevalence of hypertension and chronic kidney disease and associated risk factors were also determined in a subgroup of the birth mothers of the cohort, to establish differences between the younger and older age groups.

Supervisors: Dr J Fabian and Professor S Norris

THESIS: Novel antiangiogenic peptide targeted therapeutic Nano system for non-small-cell lung carcinoma

This research focused on the design and development of a peptide targeted drug delivery Nano system for effective treatment of non-small-cell lung carcinoma. The research resulted in the successful formulation of a novel peptide-functionalized delivery Nano system for paclitaxel, with a demonstrated tumor targetability and antiangiogenic activity. The developed Nano system presents with potential for application in targeted cancer therapy.

Supervisors: Professor Y Choonara, Dr S Adeyemi and Associate Professor T Marimuthu

THESIS: Optimizing laboratory-rearing parameters for anopheles funestus to enhance scalability towards the sterile insect technique

Anopheles funestus, a primary African malaria vector, presents a formidable challenge to vector control due to insecticide resistance. The species is understudied, and its inherent difficulty in laboratory colonisation is compounding this issue. This hampers research and formulation of novel vector control strategies. This study represents a groundbreaking endeavour to investigate the non-insecticidal control method known as the sterile insect technique. This innovative approach holds promise in providing a novel avenue for mitigating the impact of *Anopheles funestus* in malaria-endemic regions.

Supervisors: Dr G Munhenga, Dr M Kaiser and Professor L Koekemoer

THESIS: Development and Validation of a school-based mental health education programme for in-school adolescents in Lagos, Nigeria

An increasing prevalence of mental health challenges among adolescents, with its onset identified in early/mid-adolescence has called for global concern. A sequential, multi-method research design was used to develop and validate a school-based mental education programme for adolescents in Nigeria's school settings. The overlapping themes from the quantitative and qualitative data sources and findings from the scoping review informed the content of the school-based mental health education programme.

Supervisors: Dr A Tshabalala and Professor J Bruce

THESIS: Histo-morphological perturbations in the testes of diabetic Sprague Dawley rat following Atripla® and alcohol co-administration.

This study investigated the impact of concomitant use of alcohol and Atripla®, a combination antiretroviral therapy (cART) in diabetic condition on male reproductive system. The study's results show that diabetes-cART-alcohol interaction causes exacerbated testicular damage and reproductive hormone dysregulation via induction of oxidative stress, inflammation, and androgen receptor depletion. The findings are a basis for further research and will invaluablely assist clinicians in management of male reproductive dysfunctions in diabetic people living with HIV/AIDS and on cART, who consume alcohol regularly.

Supervisors: Associate Professor E Mbajjorgu and Dr P Nkomozepe

THESIS: Development of an Interprofessional Education and Collaborative Practice curriculum for health science students at Sefako Makgatho Health Sciences university

An IPECP curriculum for health science students at Sefako Makgatho Health Sciences University (SMU) was developed and validated. Phase I, the situational analysis through a scoping review, focus groups, and a campus-wide needs survey. Phase II, a curriculum map analysis of 11 profession-specific curricula. The results of Phases I and II informed the development of an IPECP curriculum. Phase III validated the SMU-IPECP curriculum and the accompanying design principles. Although planned for SMU, the curriculum could be customised for similar university contexts.

Supervisors: Dr P Barnard-Ashton, Dr F Adams and Dr SHJ Du Toit

THESIS: HIV Infection, Antiretroviral therapy and the Haemostasis of pregnancy

The findings described in this body of work in pregnant women living with human immunodeficiency virus (HIV) with access to antiretroviral therapy (ART) illustrated that pregnancy related venous thrombo-embolism (VTE) can be attributed to HIV through an imbalance of maternal haemostasis. The studies in this research identified changes in coagulation, fibrinolysis and endothelial activation which may contribute to the already prothrombotic state of pregnancy.

Supervisors: Associate Professor E Libhaber, Professor B Jacobson and Professor HR Büller

THESIS: Genetic associations with blood pressure and hypertension in African populations

Hypertension is a major risk factor for cardiovascular disease and is on the rise in African populations. It results from a complex interaction between genetic susceptibility and lifestyle-related factors. This PhD research investigated genetic associations with several blood pressure traits in 10,775 individuals, from three sub-Saharan African geographic regions, with varying hypertension prevalence (31-77%). While replicating known genetic associations and detecting novel associations, it highlighted the need for larger multi-region genetic studies in Africa, to improve hypertension risk prediction.

Supervisors: Professor A Choudhury, Professor M Ramsay and Dr J Brandenburg

TUGENDHAFT, Aviva

Public Health

THESIS: Engaging the public in priority setting for health in rural South Africa

This thesis explores meaningful public engagement in health priority-setting in a rural community. It focuses on a context specific deliberation tool, decisions made, and influencing factors. The community prioritised curative services due to scepticism about prevention, mobile clinics to address accessibility issues, and engaged in deliberations about allocating resources between HIV/AIDS and non-communicable diseases. There was alignment between individual and societal priorities with some age-related variations. Empowering individuals in health service design enhances participation and legitimacy. Combining group and individual perspectives may reconcile diverse priorities.

Supervisors: Professor K Hofman, Professor K Kahn and Associate Professor N Christofides

WORSLEY, Catherine Mary

Haematology & Molecular Medicine

THESIS: Life history trade-offs associated with evolution of cancer

The key hypothesis of this study was that selective pressures in the tumour microenvironment drive trade-offs between tumour cell survival, proliferation, and apoptosis. This study revealed that different life history strategies are employed by different cancer types, and highlighted that acidity in the tumour microenvironment drives tumour cell adaptation and survival. This study also identified apoptosis as a pro-tumorigenic and immunosuppressive driver of cancer progression, with relevance to important therapeutic implications.

Supervisors: Associate Professor E Mayne and Professor R Veale

YUSUF, Muhammed Suraj

Physiology

THESIS: Volume-Dependent Primary Hypertension in a Community of African Ancestry

This thesis emanating in 3 international publications advanced our understanding of renal-related, volume-dependent primary hypertension. The thesis demonstrated that the increases in systemic blood flow are strongly genetically predetermined, that an impaired release of atrial natriuretic peptide (ANP) contributes to an uncontrolled blood pressure (BP), and that ANP release is essential for maintaining cardiac function despite volume-dependent increases in BP and hence cardiac mass. Hence, targeting the volume overload in volume-dependent primary hypertension is best achieved by increasing circulating ANP concentrations.

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

FACULTY OF HUMANITIES

DEAN: PROFESSOR M MUSEMWA

BA Hons (Zimbabwe) MA (Cape Town) PhD (Minnesota, USA) MASSAf

Doctor of Philosophy

BIESMAN-SIMONS, Claire

Education

THESIS: Exploring a culture of reading: a case study in an under-resourced South African primary school

The candidate interrogates the ubiquitous term 'culture of reading' in the context of the South African literacy crisis. She demonstrates how government's incoherent and shifting use of the term at the national level avoids addressing policy failures and the provision of adequate resourcing. Accompanying this is an ethnographic study of a primary school on the Cape Flats. A Bourdieusian analysis illustrates the precariousness of creating a culture of reading when social, linguistic, cultural and contextual realities are not taken into account. Supervisor: Professor K Dixon

BLESSED-SAYAH, Sarah Enaan-Maseph

Education

THESIS: Children moving across borders: equitable access to education for undocumented migrants in South Africa

This thesis investigates undocumented migrant children's access to education in South Africa. The qualitative, phenomenological study combines Sen and Unterhalter's capability theories to analyse problems undocumented migrant children and their parents face, and the strategies pursued, to ensure their human and legal right to equitable access to education. This study is significant because, aside from its careful analysis of theoretical concerns and policy contradictions regarding migration, it gives a powerful voice to these marginalised, vulnerable children and their parents. Supervisor: Dr D Griffiths

BOKABA, Shadrack

Arts and Culture Management

THESIS: The historical contribution of black musicians to Orchestral Classical Music around Johannesburg and the implications for cultural policy

This study documents the under-recognised historical contribution of black musicians to orchestral classical music in and around Johannesburg. It also analyses the conditions that enabled these musicians to practice these art forms. Establishing a dialogue between professional experience and what scholarly reflection can do for that practice, the author places government's arm's length funding model under scrutiny and finds that this approach has been applied inconsistently since it was adopted in post-apartheid policy. Supervisor: Associate Professor B Pyper

THESIS: "People is people": African personhood in the works of Bessie Head

This thesis traces the creative writer Bessie Head's approach to personhood. Rooted in a post-oppositional view of love expressed as acts of ubuntu, she develops a new paradigm of African personhood distinct from western conceptions of the person. Rejecting the forms of literary and political protest of her time and focusing on the rural context, Head applies three narrative strategies: namely, love-based relationships between individuals; love as acts of ubuntu between people; and sage philosophers who mediate history.

Supervisor: Professor C Hofmeyr

CERUTI, Claire Helen Mary

Sociology

THESIS: Strikes and eventful identities: South Africa's public sector strikes, 2007 and 2010

Based on ethnographic research and using a rich archive of photographs, the candidate interrogates strike identities across two historic public sector workers' disputes in 2007 and 2010 that coincided with crucial contestations in the ANC-led alliance. It tracks complex changes in strikers' identities, especially in relation to the alliance and the state as employer. The candidate re-theorises 'eventfulness' as processual and partial politics where the strikes did not rupture the alliance but altered its coherence and practice, portending changes to come.

Supervisor: Professor B Kenny

CHINGUWO, Paliani

Sociology

THESIS: Occupational Stress and Burnout among Clinical Officers at Public Hospitals in Malawi: impact shifting to the general public

The candidate's thesis examines the causes and consequences of occupational stress and burnout among healthcare workers in Malawi, drawing on qualitative fieldwork at five public hospitals in the country. He argues for reconceptualizing occupational health and safety to account for stress and burnout, thereby improving the provision of public healthcare.

Supervisors: Professor B Kenny and Dr B Scully

CHITIKI, Elizabeth

Psychology

THESIS: Gendered affective economies of male sexual violence against men in South Africa

This thesis looked at how men's sexual agency and subjectivity are socially constructed in the context of sexual violence. Online radio talk podcasts and virtual ethnographies were examined using the frameworks of a Foucauldian Discourse Analysis and Affect Theory. The findings demonstrate that male sexual violence victim-survivors have a greater obligation to demonstrate their deservingness of empathy and victim-worthiness.

Supervisor: Associate Professor P Kiguwa

DE KLERK, Danie

Education

THESIS: A social realist perspective of academic advising in a South African higher education context: a study of practices and practitioners

This thesis by publication explores academic advising at a South African university. The study makes a novel contribution to the limited knowledge base about advising and the work of advisors in a South African higher education context. A social realist lens is adopted to analyse empirical data, highlighting the complex nature of advising and its transformative potential for student success. The thesis calls for major shifts in the way advising is perceived and practiced for its potential to be realised.

Supervisor: Associate Professor L Dison

DEWA, Nokuthula Ntombiyelizwe

Education

THESIS: Conceptualisation of inclusive education: Impact on primary school principals and foundation phase teachers

This study investigates the impact of principals' and teachers' conceptualisations of Inclusive Education on their teaching practice. Recognising that these conceptualisations inform pedagogical decisions, the study emphasised the need for pedagogical shift for inclusive practice. The study found that South African teachers are at different stages of making this shift. The distinctive contribution relates to implications for targeted rather than generic professional development that engages underlying beliefs and ways of thinking and conceptualizing Inclusive Education to support more effective inclusive practice.

Supervisor: Dr T Bekker

GENOVESE, Nicola

Digital Arts

THESIS: THE STEEL FIG LEAF: Exploring the Grotesque Ambivalence of the Male Body and Its Masculinities through Sculpture, Performance Art, and Theatre

This Creative Work PhD examines the interplay between the author's artistic praxis and the discourse surrounding masculinities and the male body. The overarching research objective is to elucidate that, through his sculptural and performative body of work, the author is able to interrogate and challenge the reductive categorization of the so-called cis-straight white man. This investigation serves to unveil intricate nuances that fundamentally question the boundaries of that category.

Supervisor: Associate Professor C Doherty

GILDER, Barry Phillip

Creative Writing

THESIS: At Fire Hour

This novel, which is distinguished by vivid characterisation and formal inventiveness, explores the role of art and artists in the struggle against apartheid. The novel is accompanied by a wide-ranging essay on art, exile and revolution, further enriching themes brought vividly to life in the fiction through analysis, interviews and archival material.

Supervisor: Professor I Vladislavić

THESIS: Paper Choreography: My ancestors dance through me

Herein is a complex desire to trace and evoke absence in the archive. This prompts a practice made from within research that surfeits genealogical traces as values that intertwine in the paradigm of research un/making. Creating is the scrutiny of the self along with genealogies of dance, community, historical contestations, and cross-cultural landscapes in working with mechanics of absence; and undertaken proposed templates of making meaning within the interrogation of the archive as a careful choreographic proponent of de-colonial discourse.

Supervisor: Dr M Taub

HOUSEN, Nazira Bee Bee

Interdisciplinary Digital Knowledge Economy Studies

THESIS: A critical review of academic practice and integrated edtech use at a South African University: the 'real' level

This research investigated how academics' digital competence and critical digital pedagogical knowledge shaped teaching. Three crucial dimensions of knowledge and enactment emerged, namely digitally enabling structures, digitally informed cultures, and digitally capable agency. Academics function within a socio-cultural stratum and a psychological-cognitive stratum yet are limited in their capacity to respond proactively to external change and internal complexity. Therefore, the system requires re-routing from its traditional path by critically reframing pedagogy through transformative foresight, where parts within the system work co-terminously.

Supervisors: Dr L Abrahams and Professor N Agherdien

KAMPUNZU, Pacifique Kindja

French

THESIS: Perceptions and practices of the teachers of French regarding communicative language teaching in Gaborone Secondary Schools

This thesis investigates how teachers of French in Gaborone secondary schools perceive and implement the Communicative Language Teaching (CLT) approach in their classrooms. A qualitative approach was employed to explore the practices and perceptions of teachers of French. The findings demonstrated that teachers had a narrow understanding and several misconceptions about the approach and that cultural and institutional factors had a negative impact on its implementation. The study highlights the need for an adapted CLT approach that takes local, contextual and sociocultural factors into account.

Supervisor: Dr F Horne

KIMANI, Anne Wacango Muguro

Education

THESIS: Professional learning communities for inclusive pedagogy: what teacher talk in professional communities reveals about teacher professional identity and agency

This thesis contributes a conceptual understanding of the interplay between teachers' professional identity and the sociocultural contexts of professional learning communities in a full-service school. The thesis argues that simply acquiring knowledge and skills for inclusive teaching misses the need to focus on teacher professional identity and agency. Through analysing teacher talk in professional learning communities, the research demonstrates how teacher talk mediates teacher learning, identity and agency for inclusive pedagogy.

Supervisors: Professor E Walton and Professor K Brodie

THESIS: Engaging with immigrant adolescent learners to co-construct an Acculturation Strategy for Integration in South African Schools

The study delved into the experiences of immigrant adolescent learners, with the objective of collaboratively developing an acculturation strategy to facilitate integration within South African schools. It used Photovoice within the framework of Participatory Action Research (PAR), which ensured equitable power distribution and the acquisition of authentic immigrant experiences. In addition to advocating for a comprehensive approach to multiculturalism, this study offers recommendations relating to policy and practice with the aim of promoting a human rights and social justice culture.

Supervisors: Dr R Pillay and Dr K Mashego

THESIS: The impact of learning mathematical vocabulary of functions using the frayer model on conceptual understanding and mathematical performance of Grade 11 learners

The candidate's study investigated the impact of integrating the learning of mathematical vocabulary and the learning of mathematical content by Grade 11 learners in secondary schools in Gauteng province, South Africa. Frayer Model was found to be an effective strategy for learning mathematical vocabulary, in enhancing conceptual understanding and mathematical performance, offering educators a valuable pedagogical tool. The study argued for adoption of the Frayer Model through the mathematics curriculum amendments.

Supervisor: Dr B Mofolo-Mbokane

THESIS: University of Mpumalanga students' use of Moodle in promoting mathematics self-directed learning

This thesis investigated the university of Mpumalanga students' use of Moodle in promoting mathematics self-directed learning. The study sought to develop a Moodle Self Directed Learning Theory that can explain the relationship that exists between Moodle Learning Management System and students' self-directed learning. The findings show that Moodle improves students' self-directed learning through self and independent learning. This study contributes to the understanding of the integration of strategies that can be used to encourage self-directed learning in South African universities.

Supervisor: Professor J Makonye

THESIS: Towards a decolonized and africanized school history curriculum in post-apartheid South Africa

This study investigated ways in which the School History Curriculum in post-apartheid South Africa could be decolonized and Africanized, especially where knowledge building is a concern. The investigation was carried out both conceptually and empirically with semi-structured interviews used as methods of generating empirical data from in-service history educators in Gauteng and Limpopo Province. The findings revealed that a decolonized and Africanized School History Curriculum should be underpinned by an all-inclusive ecologies of knowledge approach, based on a trans-modern pluriversal view of the past.

Supervisors: Professor NLL Ramoupi and Dr T Mathebula

MASONDO, Wanda

Education

THESIS: Secondary school mathematics teachers' identity and mathematical discourse in instruction

The candidate explored teachers' mathematical identity and experiences after participating in a professional development course for secondary mathematics teachers which focused on improving their mathematics for teaching. One of the key contributions of his work is a quantitative instrument to investigate common elements of identity of groups of teachers. This was complemented by a qualitative analysis of lessons of four teachers, exploring connections between their learning on the course, their teaching practices in the classroom and their actual identities.

Supervisors: Professor C Pournara and Professor N Carrim

MATARIRO, Mariyeni

Education

THESIS: Investigation of complex multilingual practices of learners and teachers in a Johannesburg school

This thesis revealed a prototypical multilingual Johannesburg school where more than one language for learning and teaching is used simultaneously, albeit often surreptitiously. It affirmed a global multilingualism crisis where learners' complex meaning making practices are curtailed by one-ness ideologies of the past. The citiness of Johannesburg adds to re-theorization of multilingualism using horizontal lenses.

Supervisor: Professor L Makalela

MAVHIZA, Grace

Education

THESIS: Adolescents' identity development through literature: a study of pedagogy and canon in the Grade 11 English FAL poetry classroom

The candidate is a lecturer at Stadio School of Education where she teaches English modules. With over 10 years of experience as a high school teacher, Grace has demonstrated a passion for teaching and an unwavering commitment to the development of language education. Her PhD research on adolescents' identity development through English literature points to the need for transformation in poetry pedagogy and canon for English FAL learners.

Supervisor: Dr N Nkealah

MAVODZA, Emma

Development Studies

THESIS: The 'social life' of digital money: user experiences of mobile money in Manzini, Eswatini and Masvingo, Zimbabwe

This rich ethnographic study examines mobile money usage in two informal markets in Eswatini and Zimbabwe. It rejects a framing of mobile money as financial inclusion. Instead, it shows how the mundane financial practices of digital money integrate into social relations and meanings, which deepen precarity, informality, trust, solidarity, and gendered relations.

Supervisors: Professor B Kenny and Dr O Katsaura

THESIS: Investigating the development of experiential skills in Grade 11 Life Sciences

'A learner learns by doing' an argument continuously used in Life Sciences education. This form of active learner involvement with practicals develops experiential skills. Genevieve focused on implementing a model that developed a skilled learner. This is the first study of this nature within life sciences in the South African context. The research makes a significant contribution for a more proficient life sciences learner with clearly developed experiential skills; one who employs adaptable skills in assessments with enhanced proficiency. Supervisor: Dr P Mabenge

MGIBISA, Mbuyisi

Media Studies

THESIS: Media Voices and Power: a decolonial analysis of black voices in the- post-apartheid South African media landscape using City Press newspaper as an analytical focus

A dissertation writing from a historical moment, engaging with the unreconstructed nature of South Africa's newsrooms, that brings together questions of black consciousness, and a more inclusive black politics for the nation. The candidate raises the bar for a theoretical and historical engagement with the possibilities of transformation, weaving together a fine grained philosophical understanding of liquid blackness, decoloniality, and popular politics. This is a significant contribution to both Media Studies as well as Black Thought, arguing from and infected by contemporary South African experience.

Supervisors: Associate Professor G Daniels and Professor D Menon

MOKOENA, Moratoa Trinity

Drama

THESIS: A pandemic shakes our pedagogy: attempts to honour the integrity of a South African tertiary institution's Applied Drama and Theatre curriculum in online learning platforms as a result of COVID-19

The research investigates the impact of COVID-19 and the digital divide on teaching and learning an Applied Drama and Theatre curriculum online. The ethnographic case study examines the efforts of five educators at Drama for Life as they negotiate a characteristically embodied and experiential pedagogy that thrives on participation and collaboration, praxis and immersion in social contexts, remotely. Learning from both successes and failures, the compelling study recommends the continued promotion of a progressive and feasibly multimodal pedagogy.

Supervisor: Dr P Janse Van Vuuren

MUCHEMWA, Marifa

Demography and Population Studies

THESIS: Family change, child maintenance and mental health outcomes of men in South Africa

This study examines the effect of family change and child maintenance on men's mental health outcomes in South Africa, focusing on depressive symptoms and psychological disorders. Family change in South Africa is characterised by increasing rates of cohabitation and solitary living. Solitary living is a risk factor for depressive symptoms and psychological disorders while cohabiting is a risk factor for depressive symptoms. Payment of child maintenance does not affect men's mental health, but denying fathers access to their children does.

Supervisor: Professor C Odimegwu

THESIS: An exploratory study on mobile-based psychological interventions for improving mental health in students

Mental health challenges are a major concern amongst university students. This multiphase mixed methods doctoral study explored the use of a mobile health intervention to address mental health challenges by developing and assessing a mental health application designed specifically for university students. The findings of this study highlight the need to incorporate user-friendly digital interventions at campus counselling centres for effective student mental health care.

Supervisors: Dr V Jithoo and Professor J Dietrich

THESIS: Wartime rape, gender and militarism: the Bukavu people's conceptualisation of the emergence of wartime rape in the 2004 Kivu conflict in contrast to the 1996 first Congo war

This PhD argues that wartime rape in the Kivu region is a multi-layered violence that interlaces into one act of wartime rape: the historical dimension (centring on land), the broader strategic considerations, and the destruction of victims' subjectivities and the community's symbolic order.

Supervisors: Dr K Von Holdt and Professor G Stevens

THESIS: A deep divide in South African Art Music: locating the Voice of the Performer

Through archival and autoethnographic research Nay's doctorate traces a deep political divide in the discourse on art music composition in South Africa since the 1980s. As one of the country's most celebrated pianists, the candidate's intervention revealed, from the perspective of the performer, the effects this politicised discourse has had on the life of South African art music in a contested musical landscape. It is a model of creative research, encouraging performers to exert their voices forcefully, and charting a path by which they may do so.

Supervisor: Dr G Olwage

THESIS: The development and validation of a theoretical construct describing content knowledge for teaching science: a case study with organic chemistry

The study argued for science subject matter for preparing science teachers to be distinct from mainstream academic content. Its unique character was derived from portraying the relationship between Academic Science disciplines and School Science and proving it as a theoretical construct termed Teacher-related-Science-Content- Knowledge (TeSK). The translation of TeSK into a powerful, teacher preparation content curriculum was successfully achieved by using Schwab's curriculum faces. Exposure to a TeSK-based curriculum has proven to make the teaching of the connections across abstract concepts easier.

Supervisor: Professor M Mavhunga

THESIS: Sustaining the Unsustainable? Political Accountability and Development in sub-Saharan Africa's Resource Economies

This thesis addresses a fundamental challenge for African countries richly endowed with minerals and oil: how to use these resources to support inclusive development that outlasts their depletion. Combining statistical analysis with country studies, it highlights the advantages of democracies with well-institutionalized party systems, which help citizens hold their governments accountable.

Supervisor: Associate Professor R Alence

THESIS: Igeza lensizwa as fashioned by ILanga le Theku

The thesis explored igeza lensizwa fashion inspired photographs and their accompanying captions in the first isiZulu-language lifestyle supplement; ILanga le Theku. The exploration of shifting representations of Zulu masculinities, foregrounded masculinities which rested on ukuzithemba and ukuzizwa, pushing back at staid scholarship with its focus on martial Zulu masculinities. The study developed concepts which facilitate nuanced readings of representations of Zulu masculinities. By focusing on looking relations, the study unpacked how young, Zulu men were encouraged to become comfortable with masculine beauty.

Supervisor: Dr D Mupotsa

THESIS: Rethinking the Logics of the Sex/Gender Anatomical Schema

The candidate performed an appraisal of the dominant sex/gender discourse in select South African feminist texts. The research challenges the uncritical adoption of colonial sex/gender frameworks when making sense of indigenous ways and modes of being and, drawing on Critical Discourse Analysis, proposes an Afrocentric alternative that goes beyond Eurocentric bio-logical frameworks.

Supervisor: Dr S Dube

THESIS: Impact of green building features and initiatives on individual productivity and organisational performance in office buildings

The thesis developed and demonstrated an initial empirical validation of a model showing the psychological pathways linking green building features and initiatives to individual work productivity and organisational performance in green buildings. For the green building community, uncovering these pathways is described as the "holy grail" that supports the value of green buildings for building occupants.

Supervisor: Professor A Thatcher

THESIS: Investigating the emotional dimension of subject advisers' work with teachers

The study investigated the emotional dimension of subject advisers' work with teachers. Using emotions as a conceptual and analytical lens, the findings of the study revealed that subject advisers are frustrated by the complications involved in mediating between their roles of monitoring and support. The tensions generated by the contradictory demands of monitoring for compliance, while simultaneously offering supportive engagement for a teachers' particular issues, complicates their interaction with teachers. Yet, despite the challenges they encounter, subject advisers remain committed to their jobs.

Supervisor: Dr C Steinberg

PASSCHIER, Shmerah

Film and Television

THESIS: Constructing the Afrocyborg in VR 360 Cinema: a Critical Investigation into how Two African Women

Filmmakers Collaborate to Construct Prosocial African Science Fiction in Virtual Reality Filmmaking

Explores the concept of the Afrocyborg in VR 360 cinema, a term inspired by Donna Haraway's cyborg scholarship. The Afrocyborg VR Collective was formed to empower women in VR filmmaking and address social justice at the intersection of 4IR immersive media technologies. Their two films, *The Cosmic Egg* and *The Eye of Mutwa* explore eco-consciousness, data colonialism and 'white fragility' amid the African 4IR.

Supervisors: Associate Professor T Sakota-Kokot and Dr Y Koba

PHOFI, Caroline

Social Work

THESIS: "Youth enterprising": Johannesburg youth's motivation, perceptions and experiences regarding entrepreneurship and services provided by the government and the private sector

This qualitative study rooted in an interpretive paradigm explored youth enterprising, motivating factors, perceptions, and experiences of youth towards services provided by the government and the private sector. Findings revealed that business and entrepreneurial skills should be integrated not only into economic sciences, but also within human sciences such as social work. The study resulted in the development of principles and guidelines to be used by social workers and other social services stakeholders in their programmatic interventions with youth entrepreneurs.

Supervisor: Associate Professor E Pretorius

RITCHIE, Linda Anne

English

THESIS: Translanguaging with 'Monolingual' Teachers and Heterogeneous Multilingual Learners: forging new pedagogies with Shakespeare

The candidate's doctoral research focused on translanguaging as a teaching strategy in secondary schooling in South Africa. She identified Shakespearean drama as a surprisingly effective vehicle for introducing this approach in the English classroom. This thesis balances the objective voice of a researcher with welcome self-reflexivity based on the candidate's own experience as a teacher.

Supervisors: Professor C Thurman and Dr D Newfield

SALMON, Audrey

Fine Art

THESIS: Paradise on Earth as a Motto, the Price of Happiness. What Happens to the Body in Late Capitalism

The research diagnoses the effects of late capitalism on the body. A body repeatedly subjected to the ideology of Paradise on Earth. An epitome that happens to be a meaningless empty signifier of hope and desire.

Supervisors: Associate Professor D Andrew, Associate Professor K Gillespie and Associate Professor T Sakota-Kokot

SNYMAN, Johannes Hendrik Bailey

Drama

THESIS: Articulating embedded choreographies: Implicit knowledges as/and choreographic strategies

This thesis explores choreographic documentation and the creative process, focusing on choreographic writing and embodied autoethnography. It deploys two theoretical lenses, Michael Polanyi's (1958) embodiment philosophy and articulates a third dimension of knowledge: embedded-implicit knowledge and its link to 'knowing' and intuition. The second lens is crafting choreographic strategies from Harald Grimen's (1991) four interpretations of Michael Polanyi's 'tacit knowledge'. Its contribution to knowledge is the articulation of the third area of knowledge between tacit and explicit knowledge: embedded-implicit knowledge and its link to intuition.

Supervisor: Associate Professor S Ravengai

STONE, Brigitta

Fine Art

THESIS: Wayfaring Stone: learning to think with Stone, as vibrant matter, in the post-extractive urban terrains of the Witwatersrand Ridgeline

The candidate's thesis addresses human-geological relationships within Johannesburg's post-extractive urban terrains. Using fine arts and grounded documentary practices, she developed a series of counter-narratives to those of extractivism, colonialism, and the impacts of the Anthropocene. Drawing on critical material concerns shared by the post-extractive cities of the global South, she finds and holds space for knowing and thinking with things through bodily encounters. Her position enlivens art and architectural practices in the collapse of the modernist city.

Supervisors: Associate Professor D Andrew and Associate Professor H Le Roux

THONJE, Admire

Development Studies

THESIS: Love, Care, and Cure: Economies of Affect in a Zimbabwean Transnational Pentecostal Church

The candidate's research focuses on how affective ties, mediated by Pentecostalism, connect Zimbabwean migrants in South Africa to settings both in South Africa and in Zimbabwe. Demonstrating how these ties are produced and sustained but also dissipate; he argues that within these settings, believers and non-believers are engaged in networks of affective solidarity, care, and love.

Supervisor: Dr O Katsaura

THESIS: Dental occupations in transition: Boundary contestation and curricula for oral hygienists in South Africa

The thesis explored the impact of recent regulatory changes on oral hygiene practice in South Africa, focusing on its implications for dental occupation dynamics. Legislative advancements have provided greater autonomy to oral hygienists, leading to contested boundaries with dentists. The study utilized qualitative methods, including interviews and curriculum analysis, revealing challenges in the implementation of regulatory shifts. The thesis emphasizes power struggles and self-imposed limitations within the profession, shedding light on the complex interplay of forces affecting progression and professional boundaries.

Supervisors: Professor Y Shalem and Professor S Allais

THESIS: Diasporic Landscape: a Geosemiotic Analysis of Greekness in Johannesburg

The dissertation offers an analysis of the Greek diaspora in Johannesburg and how it describes its own national, cultural and political identity in space. The candidate's thorough and original work shows the role played by language and other forms of meaning-making in constructing authenticity as well as inscribing it in the material world in order to create distinctive diasporic spaces.

Supervisor: Dr G Baro

THESIS: Exploring Grade 10 physical science teachers' pedagogical approaches to the electricity topic in selected Vryheid rural schools, Kwazulu-Natal province

This study investigated physical science teachers' pedagogical approaches and their reasoning during the electricity lessons in Grade 10 rural classrooms. In a context where learners continue to perform poorly in electricity topic from Grades 9-12, the study contributed knowledge that is necessary to understand teachers' experiences. Interaction with rural teachers, as the continuing under-researched context, revealed the importance of appropriate science teacher's training with strong pedagogical content knowledge. Important recommendations for teacher training institutions, department of basic education.

Supervisor: Professor T Nkambule

FACULTY OF SCIENCE

DEAN: PROFESSOR N CHETTY

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

Doctor of Philosophy

CARLSON, Warren Anthony

Physics

THESIS: The large N limit of heavy operator excitations

Half-BPS operators comprising order N fields were studied in the context of the AdS/CFT correspondence. The exact spectrum of the one-loop dilatation operator was computed for large N, indicating integrability beyond the planar limit. Furthermore, the generating function of giant graviton bound states was shown to be an eigenfunction of the one-loop dilatation operator, with implications for generating asymptotic series of correlators and symmetric group characters.

Supervisor: Professor R De Mello Koch

CHATSIWA, Jaison

Geography, Archaeology and Environmental Studies

THESIS: Climate variability and asset adaptation of small-scale farmers in Zimbabwe's Gokwe South District: a search for a knowledge integration approach

The study investigated how small-scale farmers of Gokwe South District in Zimbabwe are modifying their asset portfolios in reducing climate vulnerability due to climate variability. It evaluated the institutional and policy frameworks to achieve sustainable climate-variability asset adaptation. The integration of scientific and indigenous knowledge approach was proposed.

Supervisor: Professor MD Simatele

CHIDZUNGU, Thandiwe

Geography, Archaeology and Environmental Studies

THESIS: The role of social impact assessments in skill development and sustainable communities in South Africa's Just Energy Transition from coal: a study of Carolina and Kriel mining communities in South Africa

The study investigated the role of Social Impact Assessment (SIA) in addressing skill development needs and community sustainability issues in relation to a Just Energy Transition (JET) away from coal to the renewable energy sector in the Kriel and Carolina coal mining communities in Mpumalanga, South Africa. It explored the sustainability perspectives, the skill development needs, and evaluated the potential of SIA as a strategy for assessing and addressing the social impacts of JET and as an entry point in JET policy decision-making.

Supervisor: Dr A Wafer

THESIS: The application of weakly supervised learning in the search for heavy resonances at the LHC

This thesis describes search procedures based on weakly supervised learning applied to mixed samples and used to search for resonances with little or no prior knowledge of the production mechanism. The effectiveness of this method

is measured by the production of the Standard Model Higgs boson, which decays into a pair of photons in both inclusive and exclusive regions of phase-space at the LHC.

Supervisors: Professor B Mellado and Dr X Ruan

THESIS: Rationalisation of deep neural networks in credit scoring

Machine learning and deep learning have become pervasive technologies of the 4IR, driven by improved processing power of computers, exponential growth of datasets, and the changing perceptions of data as an asset. This thesis explores the application of deep learning techniques in credit risk assessments for financial institutions, addressing the inherent lack of transparency in these models. By comparing different models and employing state-of-the-art explanation techniques, this research demonstrates the potential of deep learning models and the feasibility of explaining their predictions in the context of credit scoring.

Supervisor: Professor T Celik

THESIS: Late triassic to early jurassic ecology: an insight into diet and trophic levels using non-traditional Ca isotopes

The candidate's novel findings show that calcium isotopes can be used to understand trophic separation and paleodiet among vertebrates living in habitats up to 220 million years old. These discoveries open up new opportunities for understanding whether ancient life had similar biological parameters to life in modern ecosystems.

Supervisors: Professor G Bybee and Professor J Choiniere

THESIS: Reassessment of the phylogeny of basal Therapsida using micro-tomography and Bayesian phylogeny

The Therapsida, the forerunner of mammals, thrived predominantly during the Permian and Triassic Periods, dominating the contemporary ecosystem. The thesis delves into the cranial anatomy of multiple taxa, employing cutting-edge CT-scanning and 3D reconstruction techniques. Additionally, it undertakes a thorough re-evaluation of the phylogenetic interrelationship among therapsid groups, employing both Bayesian and parsimony methodologies.

Supervisors: Dr J Benoit and Professor B Rubidge

THESIS: Late Quaternary palynological studies at Lake St. Lucia, KwaZulu-Natal

From palynomorphs in a core the candidate reconstructed the past vegetation history and inferred past climate at Lake St. Lucia, KwaZulu-Natal in the last 6300 cal yrs BP. There was a transition from a humid forested environment initially to a warm and dry open woodland environment today.

Supervisors: Professor M Bamford and Dr F Neumann

FERREIRA, Mizan

Molecular and Cell Biology

THESIS: Evaluating the in vitro anti-metastatic effects of silver(I) phosphine complexes on malignant breast cancer cell lines

Globally, breast cancer is the most commonly diagnosed cancer among females. Cancer metastasis, a condition for which no effective cure currently exists, is responsible for over 90% of cancer-related deaths. This study found novel silver(I) phosphine complexes to significantly impact the metastatic features of breast cancer cells in vitro.

Supervisors: Professor MJ Cronje and Dr Z Engelbrecht

GOLOLO, Mpho Gift Doctor

Physics

THESIS: Development of TileCoM firmware and software for the off-detector electronics of the ATLAS tile calorimeter at the HL-LHC

The study is part of the South African contribution to the CERN Tile Calorimeter team where the candidate designed the hardware, firmware and software to control and monitor the electronic readout system. The prototype of this study will enable remote access to the readout system.

Supervisors: Professor B Mellado and Dr FC Argos

HEBBELMANN, Lisa

Animal, Plant and Environmental Sciences

THESIS: Factors limiting karoo shrub populations in the Nama-Karoo

The thesis focusses on understanding vegetation state change in Nama-Karoo. After examining how fire, grazing management, grass-shrub competition, rainfall and temperature drive changes in Karoo shrub populations the candidate proposed an expanded state and transition model for the grassy Eastern Upper Karoo. The candidate's expanded model highlights important rangeland management interventions.

Supervisors: Professor T O'Connor and Professor E Witkowski

INGRAM, Branden Corwin

Computer Science

THESIS: Play-style identification and player modelling for generating tailored advice in video games

In this thesis the candidate developed an end-to-end multi-component system that learns from pre-existing data and an individual's gameplay to provide real-time tailored advice. The candidate demonstrated that by identifying an individual's play-style, leveraged to learn their current and optimal performance which can offer advice that enhances their performance.

Supervisors: Professor B Rosman, Professor R Klein and Professor C Van Alten

THESIS: Study on the influence of nuclear deformation on the Pygmy Dipole Resonance in Samarium isotopes

In this thesis, the isoscalar PDR response was investigated in a deformed nucleus for the first time. Experiments coupled together a magnetic spectrometer and gamma-detector array to study the $(\alpha, \alpha'\gamma)$ reaction on axially- deformed ^{154}Sm and spherical ^{144}Sm nuclei. In contrast to the GDR response, a splitting was not observed, thereby alluding to the complex nature of these low-lying dipole states.

Supervisors: Dr L Pellegrini and Professor E Sideras-Haddad

THESIS: Interfacial engineering of NbSe₂ and TaSe₂ to enhance their electrocatalytic activity for hydrogen production

Hydrogen is said to be a promising energy source because of its abundance, environmental friendliness, high energy density and versatility. It produces only water vapor when used as fuel and can be generated using renewable energy sources. While it offers numerous advantages, challenges remain in production. In this work, new niobium and tantalum-based electrocatalysts were used to efficiently produce hydrogen through water splitting. Supervisor: Professor N Moloto

THESIS: Identification and characterisation of the interaction between FOXP2 and the ligand-binding domain of oestrogen receptor α

A novel interaction was identified between two proteins implicated in neural development and cancers: ER1 and FOXP2. This interaction is mediated by electrostatic and hydrophobic bonds between FOXP2 forkhead domain and ER1 ligand-binding domain. The interaction interferes with FOXP2's ability to bind DNA, suggesting a role in transcriptional regulation and physiological relevance.

Supervisor: Dr S Fanucchi

THESIS: Transition metals spinel-type materials as electrocatalysts for oxygen reactions

The candidate explored spinel-type transition metals as bifunctional electrocatalysts for oxygen reduction and oxygen evolution reactions in the air-cathode of rechargeable zinc-air battery. Synergistic interactions with carbon composite materials enhanced the distribution of metal d-electrons, increased surface area and led to faster kinetics for improved electrocatalytic performance.

Supervisor: Professor K Ozoemena

THESIS: Modification of boron nitride nanostructures induced by medium energy ion irradiation

The work focused on using chemical vapour deposition (CVD) as a method for synthesising boron nitride (BN) nanostructures, particularly nanotubes and to using ion implantation for selectively introducing defects into the BN nanostructures. The Raman derived crystallite domain size of the BN nanostructures prepared at 1100 °C and 1200°C significantly increased after ion implantation with boron ions at a fluence of 5×10^{14} ions/cm², which was the most noteworthy result.

Supervisors: Professor T Derry and Dr M Madhuku

THESIS: Peat dynamics in the Angolan Highlands

This PhD research delves into the under-studied and war-torn Angolan Highlands, uncovering critical insights into its hydrological, ecological, and climate significance. It contains four peer-reviewed articles published in international journals. It presents a novel peatland definition for climate science based on a systematic review, the first map of peatland extent in the region, reveals historical drought-vegetation relationships, and examines contemporary fire regimes. The findings emphasise the urgent need for peatland preservation to safeguard the environment, communities, and surrounding areas.

Supervisors: Professor J Fitchett and Professor S Woodborne

THESIS: Synthesis of carbon nanodots-peptide conjugates decorated with germanium for bioimaging

A one-pot synthesis of germanium modified carbon dots (CDs) was achieved using a microwave assisted technique. Modified CDs were used to form conjugates with peptides to improve cancer cell imaging. The study revealed that modified CDs displayed superior photoluminescence properties and that the conjugated materials are significant for designing enhanced imaging materials for cancer diagnosis.

Supervisors: Dr M Makatini and Dr M Maubane-Nkadameng

MAKUMBE, Hattie Hope

Molecular and Cell Biology

THESIS: The ligandin activity of Schistosoma 26-kDa and 28-kDa glutathione transferases towards 17β-Hydroxyandrost-4-ene-3-one from a biophysical perspective

Bilharzia accounts for over 220 million fatalities globally. Currently, there are parasite resistance challenges with the sole available remedy. The ligandin activity of Schistosoma 26-kDa and 28-kDa glutathione transferases towards 17β-Hydroxyandrost-4-ene-3-one was examined through structural and functional interactions to act as a drug target against the debilitating disease.

Supervisor: Dr I Achilonu

MASINA, Sikhumbuzo Mfanawemphi

Chemistry

THESIS: Fast oxide ion conductors for solid oxide fuel cells: average and local structure - property correlations in solid solutions of Bi_2O_3

The thesis has employed advanced methods of structural analysis such as pair distribution function, X-ray absorption spectroscopy and symmetry mode analysis to correlate structure and the physical property conductivity in solid electrolytes of Bi_2O_3 .

Supervisors: Professor D Billing and Professor C Billing

MBANGA, Odwa

Chemistry

THESIS: Dissolution of non-functionalised and functionalised nanomaterials in simulated biological and environmental fluids

The focus of the research project was on the risk assessment of gold, silver and titanium dioxide used in consumer products, to ensure sustainable development between nanotechnology and its negative impact on human health and the environment.

Supervisors: Professor E Cukrowska and Professor M Gulumian

MOKHANTSO, Tshele

Molecular and Cell Biology

THESIS: Biochemical and biophysical analysis of a hinge region protease variant in HIV-1 subtype C

HIV-1 protease is vital for the maturation of HIV. This study focused on the N37T↑V+¹⁰•D25A, an HIV-1 protease variant containing non-active site mutations. The mutations were found to reduce drug susceptibility and contribute to the drug resistance mechanism of HIV-1 by increasing molecular dynamics and reducing drug binding.

Supervisors: Professor Y Sayed and Dr I Achilonu

MOORE, Wendel Erwin

Geography, Archaeology and Environmental Studies

THESIS: The political geography of hemp Cannabis in South Africa: a development critique

The thesis about hemp Cannabis tells a different story about this controversial plant. It does so by delinking Cannabis from prohibition accounts; recognising the flaws in contemporary Cannabis medicalisation; thus, suggests an agrarian site of development where black people, poor working class and women can own, employ and lead South African futures.

Supervisors: Professor S Mnwana and Dr A Wafer

THESIS: Two-dimensional turbulent classical and momentumless thermal wakes

The two-dimensional turbulent thermal wake behind a fixed heated obstacle and a heated self-propelled obstacle was investigated. The turbulence was formulated by Prandtl's mixing length model for the eddy viscosity and eddy thermal conductivity. The conservation laws for the governing partial differential equations were derived and two conserved quantities were found. New analytical and numerical solutions for the far wake were derived and the streamlines of the mean velocity deficit and the lines of constant mean temperature difference were plotted.

Supervisor: Professor D Mason

NADUNGA, Irene

Geography, Archaeology and Environmental Studies

THESIS: Integration of sustainable development principles and climate change adaptation measures in energy optimisation in gold mining in South Africa

This study investigated how sustainable development principles and climate change adaptation measures are interlinked and structured; and embedded in a gold mining company's policies and strategies, in an effort to build the mining operations' adaptive capacity and resilience against the impacts of climate change and achieve energy optimisation.

Supervisor: Professor MD Simatele

NCHOE, Obakeng Boikanyo

Chemistry

THESIS: Inclusion of nano-silver compounds in RO membranes as solutions to fouling by microbes and natural organic matter during seawater desalination

Seawater desalination is vital for addressing water shortages. While reverse osmosis is widely used, membrane fouling is a challenge. Herein, silver-based nanomaterials were incorporated into membranes and used to degrade organic matter and prevent microbial growth, thus prolonging membrane lifespan and improving desalination efficiency.

Supervisors: Professor N Moloto, Dr K Sikhwihlu and Dr P Tetyana

NGWENYA, Nkazimulo

Animal, Plant and Environmental Sciences

THESIS: The Impact of different levels of organic plant-based compost on the macro and micro elements, secondary metabolites and water soluble vitamins content of *Moringa oleifera* leaves

The candidate investigated the potential of plant-based organic compost in boosting the mineral and phytochemical content of *Moringa oleifera*. Application of organic compost effectively improved the leaf mineral and phytochemical composition. The findings affirm organic compost use as a sustainable and environmentally friendly way of enhancing *Moringa* nutrient content.

Supervisors: Dr I Risenga and Professor L Chimuka

THESIS: Symmetry reductions and approximate solutions for heat transfer in slabs and extended surfaces

This work provides exact and approximate analytical solutions for models describing heat transfer in slabs and fins. Different symmetry methods and differential transform methods are employed to solve problems representing real world phenomena. Exact solutions may be used as benchmarks for the numerical solutions and provides insight into heat transfer processes.

Supervisor: Professor R Moitsheki

THESIS: The role of institutional arrangements in post-flood disaster management in South Africa, focusing on Kwa-Zulu Natal Province, Mphela township and Ncakubana communities

The study explored whether post-disaster management in disaster-vulnerable urban and rural communities contributes towards disaster resilience and adaptive capacity to achieve sustainable development. It examined institutional arrangements, existing measures, challenges, projects, and common disasters. Subsequently, the recommendations contributed to developing the Post-Flood Disaster Model, which was non-existent in South Africa.

Supervisors: Professor S Grab and Professor MD Simatele

THESIS: Cartographic history, the post-colonial landscape and the agricultural settlement scheme: a case study of citizen-based mapping in Northeastern Ibadan rural hinterland

The candidate examined the notion of alternative agrarian spatial thought exemplified in the community-owned farm settlement. The analysis demonstrates the impact of state cartography and landscape representations in the construction of modern agricultural rationalities. This research challenges these modern rationalities by exploring the visualisation of counter-narratives which contest state developmental visions, and alternative imaginations of the agricultural settlement scheme that unveil anticipatory spatialities in rural hinterlands.

Supervisor: Dr A Wafer

THESIS: Insights into silver(I) phosphine complexes in targeting cell death and metastatic mechanisms in malignant cell lines

The candidate conducted biochemical studies investigating the anticancer effects and metastatic mechanisms of silver(I) mono-dentate phosphine complexes on various human malignant cell lines. These findings provided insights into the apoptotic cell death mechanisms of these complexes while in silico predictions revealed a favourable interaction between a hit-to-lead complex and estrogen receptors.

Supervisors: Professor MJ Cronje and Dr Z Engelbrecht

THESIS: Hunting dark matter with faint radio halos

This work contains novel results from a search for the astrophysical dark matter that resides in galaxy clusters. Recent observations performed with the MeerKAT instrument, a precursor to the upcoming SKA telescope and one of the most sophisticated radio telescopes in the world, have provided cutting-edge constraints on the possible particle nature of dark matter.

Supervisor: Dr G Beck

THESIS: Naturally occurring asbestos (NOA) and asbestos contamination of the environment: implications for in-situ risk assessment and rehabilitation

The candidate explored the global concern of asbestos minerals and the risks associated with exposure in natural contexts. Geological, geochemical, mineralogical, and microbiological methods were used for mineral characterisation, human health hazard assessment, environmental effects, rehabilitation strategies, and the potential use of bio-solutions for developing country land restoration.

Supervisors: Dr S Master, Dr K Rumbold and Professor R Bolhar

THESIS: The application of machine learning methods to satellite data for the management of invasive water hyacinth

The candidate investigated the use of satellite data and machine learning to manage water hyacinth at a national extent. The candidate developed a tool for mapping and monitoring this invasive weed and identified key factors contributing to its occurrence. Additionally, he proposed a framework to optimise the release of biological control agents.

Supervisors: Professor C Reynolds, Professor B Rosman and Professor M Byrne

THESIS: Biophysical studies of metal chelate binding by HSA: towards an understanding of metalloidrug transport

Even though pyrrole-imine metal chelates are promising in medicine, there was uncertainty of how it interacted with the blood transport protein HSA. This study showed a patented class of metalloidrugs interacting with HSA, highlighting that metalloidrugs can be transported by HSA and can be used in medicine, as they are often neglected by pharmaceutical companies.

Supervisor: Professor O Munro

THESIS: Implementation of the DAQ software for the ALTI module in the ATLAS TileCal and the search for new physics in the four-lepton final state

The candidate contributed significantly to the upgrades of the Tile Calorimeter (TileCal) within the ATLAS experiment at CERN, particularly through the development and integration of the TileCal specific ATLAS Local Trigger Interface software. The work also involved a detailed investigation for the presence of a new heavy resonance decaying to the four-lepton final state, broadening our understanding of physics beyond the standard model.
Supervisors: Professor B Mellado and Dr X Ruan

THESIS: South African podocarpaceae distribution interpreted from a physiological and population genetics perspective

The ability of podocarpaceae to occupy, compete and persist in Afromontane forests has been an enigma. Species distribution modelling, ecophysiology and population genetics techniques were used to examine and understand podocarp distribution and dispersal in South Africa and how they respond to climate change, highlighting that podocarps will be able to persist through changing climates.
Supervisors: Dr J Fisher and Professor K Glennon

THESIS: The past, present and future of cactus invasions in South Africa in response to rising atmospheric CO₂ and climate change

Cacti are important invasive weeds in South Africa and globally. Findings from this study suggest that the negative impacts of cacti will worsen with rising atmospheric CO₂ and climate change. This is largely due to the positive effect of elevated CO₂ concentrations on cacti photosynthetic productivity and efficiency.
Supervisor: Professor M Byrne

OFFICERS OF THE UNIVERSITY

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PGCE (Witwatersrand) IEC (Stanford-USA)

Vice-Chancellor and Principal

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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

Deputy Vice-Chancellor (People Development and Culture)

PROFESSOR G STEVENS BA (Cape Town) BA Psych Hons MPsych (Western Cape)
DLitt et Phil (Unisa), MASSAf

Registrar

MS CG CROSLEY BA HDipEd (Witwatersrand) BEd Hons (Unisa) MEd (Witwatersrand)

Chief Financial Officer

MS MM MANYAMA CA (SA) BCom (Cape Town) BCompt Hons (Unisa)
BCom Hons (Pretoria) MBA (GIBS)

Dean of Student Affairs

MR JAP SEPTEMBER BA MPhil (Cape Town)

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Faculty of Engineering and the Built Environment

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FAAS MASSAf FWISA FSAAE

Faculty of Health Sciences

MBBCh MMed PhD (Witwatersrand) FCPaed(SA) MASSAf, RSSAf, TWAS, CBE

Faculty of Humanities

PROFESSOR M MUSEMWA BA Hons (Zimbabwe) MA (Cape Town) PhD (Minnesota, USA)
MASSAf

Faculty of Science

PROFESSOR N CHETTY BSc Hons (Natal) MS PhD (U. Illinois Urbana-Champaign) MASSAf, MSAIP

President of Convocation

MS K MUFAMADI BA LLB LLM (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!).

GAUDEAMUS

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!

ACADEMIC DRESS

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.

THE UNIVERSITY MACE



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.

FACULTY OF COMMERCE, LAW AND MANAGEMENT

Situated in the heart of the most powerful economic hub on the African continent, drawing on the best academic talent in the region, and connected to the most influential social agents in the country, the Faculty of Commerce, Law and Management offers an exciting and contemporary set of study programmes that grapple with the economic and social challenges of our country, and the economies across the globe. The Faculty's academic programmes aim to graduate students who study and specialize in both the technical skills that are driving and shaping modern economies and understanding the social, political and legal implications of these patterns of economic development. The Faculty offers a unique opportunity to study and understand the complex developments in the economy and the social, legal and economic consequences of these patterns of development and growth

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

We have to accept that life without Engineering and the Built Environment professionals would be immensely challenging at best and virtually impossible at worst. Our roads, bridges, buildings, cities, cars, aeroplanes, fuels, energy, financial systems, media, VR, communications systems, medical devices would not be possible without these professionals.

The University prides itself on producing global leaders in the space of Engineering and the Built Environment. Our graduates reflect the country's diversity in terms of race, class, ethnicity, sexual orientation and gender. At Wits we focus on graduating young people who have the critical and analytical skills required to contribute to developing South Africa's economy, but also have the practical know-how and leadership qualities to make them equivalent to the best in the world, and capable of attaining leadership positions anywhere they choose.

FACULTY OF HEALTH SCIENCES

The University of the Witwatersrand Faculty of Health Sciences, located in Johannesburg - the hub of the South African economy, has been established for more than 100 years and is regarded as one of most reputable institutions for health sciences education in sub-Saharan Africa. Ranked by the Shanghai Rankings as 150th in the world in subject rankings for clinical, preclinical and health subjects, the Faculty holds its own amongst the top 300 universities internationally and prepares students for a future in the healthcare sector across the globe.

As South Africa's largest and most comprehensive health sciences faculty, with over 7000 registered students, it offers undergraduate degrees in dentistry, medicine, medical and health sciences, nursing, occupational therapy, physiotherapy and pharmacy. It also offers a graduate entry medical and physiotherapy programme, Masters degrees in science and medicine and a PhD programme.

FACULTY OF HUMANITIES

The Faculty of Humanities is a leading, vibrant, dynamic centre of teaching and learning as well as a hub of academic and research excellence on the continent. Our students undergo rigorous theoretical and methodological training which imparts strong research and analytical skills and enables them to adapt, and often define, the constantly

changing world of work. Our students learn to think critically – they are problem-posers, problem-solvers, and active social citizens who make a difference in society. The Faculty has a student-centred ethos which simply means that through its Teaching and Learning Unit, it offers student support in a timely manner and ensures that it is relevant to students' needs; helps student develop a strong sense of purpose and assists students to recognise the value of their humanities degree.

The creative suite of programmes on offer in the Faculty equips our students to compete globally and to act locally. To this end, the Faculty engages creatively and critically with its location in Johannesburg – South Africa's most globally networked city – taking advantage of its dynamic political, social, economic, and cultural links to the rest of Africa and the world. The Faculty drives innovation in our undergraduate and postgraduate studies by encouraging multi-disciplinary, cross-disciplinary, inter-disciplinary and trans-disciplinary programmes that link the arts, social sciences, natural sciences, engineering, health sciences, education, and law. To this end, we have collaborative degrees in Digital Arts, E-Science, Institutional Studies, Public Health, and Law. As a research-intensive university, the Faculty is steadily increasing its post-graduate enrolments in order to innovate and service the needs of our fast-changing world. The Humanities Graduate Centre is a home for collaboration and public intellectual activities where students are active participants.

The Faculty offers a wide range of research-oriented programmes, including professional degrees. Collectively, our programmes impart skills that offer graduates access to a range of careers across a variety of professions in the public and private sectors, including, academia, research institutes and science councils, governmental and non-governmental organisations, civil society, and corporate enterprises, amongst others.

FACULTY OF SCIENCE

The mission of the Faculty of Science is to produce excellent graduate students who are equipped to make a meaningful contribution broadly to society and are ready to undertake postgraduate studies at any university in the world. A hallmark of our graduates is their independent, critical, creative and entrepreneurial thinking in the sciences, and a commitment to make this world a better place for all.

We strongly encourage you to continue your studies as a postgraduate student in the Faculty. We offer excellent coursework and research programmes in a range of diverse areas extending from Astronomy through to Zoology. The Faculty of Science is home to three out of the seven DSI/NRF funded Centres of Excellence at Wits, known for their cutting-edge research in their respective focus areas. In addition, the Faculty has been chosen as the lead institution by the Department of Science and Innovation to host the National eScience Postgraduate Teaching and Training Platform in the data sciences. Academic staff in the Faculty collaborate with leading universities and laboratories around the world.

Many of our postgraduate students spend time in overseas institutions as part of their postgraduate degrees and participate in national and international conferences. Our researchers are active participants in some of the large global science experiments and publish their work in some of the best international journals. Wits is committed to maintaining its ranking as a leading internationally renowned university producing work that is visible to the entire world, and positively impactful on the ways in which we live our lives in the 21st century. I hope you will join us in this exciting endeavour!

