FINAL GRADUATION LIST

GRADAUTION DATE: 07 December 2026
TIME: 09:30

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEAN: PROFESSOR C MUSINGWINI BSc (Hons)(Eng) (Zimbabwe) MSc(Eng) PhD (Witwatersrand) PrEng FSAIMM

Doctor of Philosophy

DAYO-OLUPONA, Oluwatobi Ifedayo *Mining Engineering*
THESIS: Towards uninterrupted Mining operations: Equipment predictive maintenance with Artificial Intelligence
This thesis developed artificial intelligence tools that predict when mining machines are likely to fail, so that repairs can be planned before breakdowns stop production. Using sensor and maintenance data from underground coal mining machines, his models detect faults early and estimate how long key components will last, helping mines run more safely, efficiently and without costly interruptions.
Supervisors: Professor B Genc, Professor O Bada and Professor T Celik

HABUMUGISHA, Didace *Electrical Engineering*
THESIS: Effects of a lightning strike on a tall metal tower on the streamer onset of nearby floating electrodes
The research investigates what happens around a tall metal tower when it is struck by lightning, particular how the resulting electromagnetic fields can affect nearby isolated metal objects. It examines how these fields may create electrical discharges, or ‘streamers,” which can lead to dangerous sparks and fires. The findings support improved lightning protection for vulnerable facilities such as floating roof tanks.
Supervisor: Professor C Gomes

JELDU, Siyum Gudu *School of Architecture and Planning*
THESIS: Bridging the housing finance problem of low-income groups in Addis Ababa: The integrative role of rotating saving and credit associations, corporate social responsibility and banks
Housing finance for low-income groups in Addis Ababa remains constrained by fragmented responses: community savings lack scale, banks’ lending reaches few households, and corporate social responsibility is uncoordinated. Drawing on surveys and interviews with households, savings groups, companies, and banks, this thesis examines how these resources can be integrated through multi-stakeholder collaboration, with the state as an enabler. It develops three models guided by the CIPS framework, offering pathways towards inclusive and sustainable housing finance in Ethiopia and comparable contexts.
Supervisors: Professor M Huchzermeyer and Dr N Appelhans

KWASAFO, Oscar Kwame *School of Construction Economics and Management*
THESIS: Developing a bid automation model for multidisciplinary consulting firms using Artificial Intelligence
The candidate’s research developed an artificial intelligence-based model to automate selected activities involved in preparing bids for multidisciplinary consulting firms. The study examined how consulting firms currently prepare bids, identified activities with potential for automation, and developed a proof-of-concept demonstrating how AI can support tasks such as reviewing bid documents, finding relevant information from previous bids, and generating methodology content. The research highlights how AI can improve the efficiency and consistency of bid preparation while retaining human oversight for tasks requiring professional judgement.
Supervisors: Professor E Saghatforoush and Dr N Govender

LEPOLESA, Leloko James *Electrical Engineering*
THESIS: Deep reinforcement learning technique for optimal load balancing in distribution networks using the charging prices of EVs
This research produced a novel dynamic electric vehicle charging pricing using reinforcement learning and convex optimization to balance load in power distribution networks. It contributes to advancing smarter, more resilient, and sustainable power grids in support of large-scale adoption of electric vehicles and the clean energy transition.
Supervisors: Professor L Cheng and Dr K Adetunji

Electrical Engineering

MABOKELA, Koena Ronny
THESIS: Multilingual sentiment modelling for South African Under-Resourced languages
The candidate's research advanced multilingual sentiment analysis for Sepedi, Setswana, Sesotho, isiXhosa and isiZulu. The study created the SAfriSenti corpus, evaluated Afrocentric language models, and developed explainable, adaptive AI approaches. This work strengthens inclusive artificial intelligence by enabling digital technologies to better understand African-language opinions and ensure that local voices are represented in decision-making.
Supervisors: Professor T Celik and Dr M Raborife

MADIGOE, Mandy Ntebo *Metallurgy and Materials*
THESIS: Development of a second generation Ti-based biomaterial for orthopaedic implants
Using computation, scanning electron microscopy and X-ray diffraction, new titanium-niobium-tantalum-zirconium alloys with the beneficial beta-phase with were identified. Nano-indentation results showed low elastic moduli (stiffness). Increased niobium, tantalum and zirconium contents and heat treatment increased the beneficial beta-phase proportions, but too much produced deleterious brittle phases. The best alloy was Ti55-Nb20-Ta15-Zr10 in atomic %
Supervisors: Professor L Cornish and Dr L Chown

NANA, Sharad *Metallurgy and Materials*
THESIS: The Effect of Welding on the Microstructural Evolution and Corrosion Resistance of Lean Duplex Stainless Steels
This research investigated how welding and thermal processing alter the microstructure and corrosion resistance of lean duplex stainless steels. By testing various welding techniques and comparing them with standard industrial alloys, the study provides valuable insights into maintaining structural integrity and preventing corrosion in more cost-effective engineering materials
Supervisors: Professor N Maledi and Dr S Oke

NGWEKHULU, Tsholofelo Themba *Metallurgy and Materials*
THESIS: An Investigation into Improved Techniques for the Efficient Detection of Agglomerates in Polycrystalline Diamond Powders
This research developed improved techniques for detecting agglomerates, clusters of diamond particles formed during powder mixing. Using advanced particle imaging and computer-based analysis, the study investigated how these agglomerates influence cobalt distribution during sintering, potentially weakening diamond cutting tools. The findings offer practical approaches to improving powder quality, structural integrity, wear resistance, and manufacturing reliability
Supervisors: Professor D Whitefield and Professor S Naidoo

PHAKISI, Stephen Lehlomela *School of Construction Economics and Management*
THESIS: Holistic Assessment Metrices for Infrastructure Megaprojects against set Strategic Economic Imperatives
This doctoral research pioneers a holistic performance assessment framework for strategic economic imperatives in multipurpose water infrastructure megaprojects to achieve multidimensional success. It employs innovative theory, methodology, policy, and practice in advancing multidimensional re-conceptualization of success using evidence-based decision-making. It informs project governance alignment towards transformative socio-economic outcomes.
Supervisor: Professor N Khatleli

RASIFUDI, Khathutshelo Joshua *Civil Engineering*

THESIS: The effect of complexity on water quality modelling performance and uncertainty

The candidate assessed the effects of rainfall and model structure uncertainty on water quality modelling using the Hartbeespoort catchment as a case study. He applied a simple and a complex water quality model and developed innovative approaches to deal with data inadequacies. Model structure was found to have a higher impact on water quality uncertainty than rainfall uncertainty. A pragmatic approach for incorporating modelling uncertainty in development scenario assessment was demonstrated.

Supervisor: Professor J Ndiritu

SHIRIMA, Mariam Genes *School of Architecture and Planning*

THESIS: Contested Corridors: Speculative urbanism, hybrid finance, and spatial transformation in Dar es Salaam

The thesis explores the dynamics of speculative urbanism in Dar es Salaam, Tanzania, focusing on two contrasting transport corridors. It shows that urban transformation often precedes formal infrastructure upgrades, driven by localized speculation rather than master-planned interventions. In doing so, it underscores the need for urban scholarship to engage critically with the distinctive logics of city-making in the Global South, rather than drawing generically on urban concepts such as transit-oriented development and gentrification.

Supervisors: Professor P Harrison and Dr S Croese

SONONO, Michelle Tatenda *School of Architecture and Planning*

THESIS: Temporary or permanent? Contradictions of everyday lived experiences in the temporary relocation areas in Stjwetla and surrounds, Marlboro, Johannesburg, and their policy implications

In many countries in the global South, states use temporary relocation areas where rehousing is needed but permanent housing is not immediately available. In South Africa, permanent solutions increasingly do not materialise and the provisional set-ups serve long-term. Through qualitative methods, this thesis examined five such sites near Alexandra in Johannesburg, revealing contradictions in how homemaking, consolidation, rental investment and income generation reshape these sites. The study reveals the uneven lived experience and provides policy direction in the context of a confounded state.

Supervisor: Professor M Huchzermeyer

ZUNGU, Zamageda *School of Construction Economics and Management*

THESIS: Narratives of organisational resilience in the South African Construction Industry: a strategy as practice perspective

This study challenges conventional understandings of organisational resilience in the construction industry. Drawing on four major South African contractors, it reveals how strategic practices and organisational narratives shape responses to disruption. The study advances a novel understanding of resilience as an organisational accomplishment sustained through credible narratives, strategic action, and leadership.

Supervisors: Professor D Root and Dr R Nkado