Graduation
Programme

The Future. Reimagined.

Dear UJ Graduate

At the University of Johannesburg (UJ), graduation not only signifies an academic milestone but also represents the emergence of a new cohort of leaders. Our objective has been to empower you as leaders who are primed to face the challenges of an ever-changing world defined by a plethora of challenges and opportunities. As you navigate these great societal shifts, we hope that your time at UJ will serve as a constant source of reference and inspiration. As we have sought to demonstrate, the Fourth Industrial Revolution (4IR) presents the opportunity for the exploration of new and exciting spheres, and you are uniquely poised to navigate this terrain. Our focus at UJ has been to create graduates who are agile, curious, and able to be active participants against this backdrop.

Your graduation today serves as a celebration of this momentous achievement! I want to take this opportunity to remind you that you now represent the privileged few in our country. You are uniquely poised to address some of the serious challenges we face and a qualification from UJ will stand you in good stead!

At UJ, you have encountered the finest academic minds from diverse backgrounds, spanning across the world as well as innovative technology-rich approaches to teaching and learning. As a result, UJ's global stature and academic robustness are recognised by the most prestigious global higher education ranking systems in the world. UJ has become a competitive player, not only in South Africa but also on the continent. You are an important part of this story.

We welcome you as a new member of our esteemed alumni community, which is making a lasting impact on society. We encourage you to join the UJ Alumni Network and become an active member of the University Convocation, which affords you an opportunity to make a significant contribution to our academic projects and beyond. Our promise in return to you is that we will continue to build UJ as an international university of choice, anchored in Africa, dynamically shaping the future.

Congratulations on this significant achievement. We look forward to witnessing you reimagine the future!

Prof Letlhokwa Mpedi
Vice-Chancellor and Principal
University of Johannesburg

**Welcome to the
Graduation Ceremony of the
University of Johannesburg
17 May 2023 at 16:30**

**Welkom by die
Gradeplegtigheid van die
Universiteit van Johannesburg
17 Mei 2023 om 16:30**

**Le a Amogelwa
Moletlong wa Dikapešo wa
Yunibesithi ya Johannesburg
17 Mopitlo 2023 ka 16:30**

**Niyamukelwa
eMcimbini wokweThweswa kweZiqu
weNyuvesi yaseJohannesburg
17 kuNhlaba 2023 ngele-16:30**

UNIVERSITY OF JOHANNESBURG

CHANCELLOR

Dr P Mlambo-Ngcuka

BA Ed (Lesotho), MPhil (UCT), DTech Ed (Warwick, England)

MEMBERS OF THE MANAGEMENT EXECUTIVE COMMITTEE

VICE-CHANCELLOR AND PRINCIPAL

Prof LG Mpedi

B Juris, LLB (Vista), LLM (RAU), LLD (UJ)

DEPUTY VICE-CHANCELLOR: ACADEMIC

Prof S Khan

BSc, BSc Hons, MSc, PhD (UWC)

DEPUTY VICE-CHANCELLOR: RESEARCH AND INTERNATIONALISATION

Prof S Sinha

BEng, MEng, PhD (UP)

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Prof B van Vuuren

BSc, BSc Hons, MSc, PhD (UP)

CHIEF FINANCIAL OFFICER

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BCom (Rhodes), BCom Hons (UKZN), CA (SA)

CHIEF OPERATING OFFICER

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BSc Eng (Wits), MBA (UOVS), MSc, DBA (Heriot-Watt, UK)

SENIOR EXECUTIVE DIRECTOR

Dr N Vukuza

BA (Fort Hare), BA Hons (Rhodes), DTE (UNISA), MA (Wits), PhD (SUN)

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BCom, LLB, LLM (NWU)

EXECUTIVE DEANS

COLLEGE OF BUSINESS AND ECONOMICS
Prof L Ntsalaze

BCom, BCom Hons (NMMU), MPhil (UCT), PhD (SUN)

FACULTY OF ART, DESIGN AND ARCHITECTURE
Prof D Smal (Acting)

NDip, NHDip Clothing (TP), MTech Fashion (TUT),
DTech Design (CPUT)

FACULTY OF EDUCATION
Prof N Petersen

BA Ed (UNISA), BEd Hons, MEd (RAU), DEd (UJ)

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
Prof DJ Mashao

BSc Eng, MSc Eng (UCT), MSc AM, PhD (Brown, USA)

FACULTY OF HEALTH SCIENCES
Prof A Temane (Acting)

BNSc (UNW), MCur (RAU), PhD (UJ)

FACULTY OF HUMANITIES
Prof K Naidoo
BA, BA Hons, MA (UDW), DTE (Unisa), PhD (Manchester, UK)

FACULTY OF LAW
Prof W Domingo
B SoSc (UCT), LLB (UWC), LLM (Columbia, USA),
SJD (Wisconsin-Madison, USA)

FACULTY OF SCIENCE
Prof R Meijboom (Acting)
M (Groningen, Netherlands), PhD (UCT)

DEAN

JOHANNESBURG BUSINESS SCHOOL
Dr R Carolissen
BSc, BSc Hons, BBA Hons,
MBA (SUN), MCom (NWU), MSc, PhD (UWC)

MEMBERS OF COUNCIL

CHAIRPERSON
Ms X Kakana

DEPUTY CHAIRPERSON
Dr Y Ndema

MEMBERS
Prof H Abrahamse
Mr FM Baleni
Ms K Gugushe
Prof D Hildebrandt
Prof S Khan
Ms K Khumalo
Ms B Madikizela
Mr M Mahlasela
Mr M Manana
Ms L Mateza
Dr A Mokoena
Ms N Molope
Prof LG Mpedi
Mr LM Mpunzi
Ms NP Mvubu
Dr WP Rowland
Ms JA Schreiner
Prof A Strydom
Mr T Thobejane

PRESIDENT OF CONVOCATION
Mr LM Mpunzi

GAUDEAMUS IGITUR

Gaudeamus igitur,
Juvenes dum sumus;
Post iucundum iuventutem,
Post molestam senectutem
Nos habebit humus.
Vivat academia,
Vivant professores,
Vivat membrum quodlibet,
Vivat membra quaelibet;
Semper sint in flore!

English

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

Long live the academy!
Long live the professors!
Long live each student;
Long live the whole fraternity;
For ever may they flourish!

Sesotho sa Leboa

Ka gona, a re thabeng,
Re sa le ba bafsa.
Ka morago ga bofsa bjo bo bose
Ka morago ga go tšofala mo go nago
le mathata
Lefase le tla ba le rena.

Phela thuto phela!
Phelang diprofesa phelang!
Phelang baithuti phelang;
Phela kagišano ka botlalo phela;
O ka re ba ka phela gabotse
goyagoile!

Afrikaans

Laat ons dan vrolik wees,
Terwyl ons jonk is;
Na 'n aangename jeug.
Na 'n onaangename oudag,
Sal die aarde ons hou.

Lank lewe die universiteit,
Lank lewe die professore,
Lank lewe elke student,
Lank lewe al die studente,
Mag hulle vir ewig hul jeug behou!

Zulu

Ngakho, masithokoze
Sisebasha nje.
Emva kobumnandi bobusha
Emva kwezinkinga zobudala
Umhlaba uzosithatha.

Phambili ngemfundo!
Phambili boSolwazi!
Phambili nakuwe mfundi;
Phambili ngenhlangano yonke;
Maziqhubeke ngonaphakade!

COLLEGE OF BUSINESS AND ECONOMICS
QUALIFICATIONS

1. **Diploma**

   Chauke, Ndzawulo Romeo (Logistics)
   Dladla, Kelebogile (Logistics)
   Kebelele, Lebohang (Small Business Management)
   Magane, Shaun (Logistics)
   Mahlo, Ditshipi Joseph (Logistics)
   Matlala, Mpho Motlhabane (Small Business Management)
   Mayulu, Mboko Rabbi (Small Business Management)
   Mongale, Tshepiso (Transportation Management)
   Ntuli, Philani Perfect Mpumelelo (Logistics)
   Sanyane, Aobakwe (Transportation Management)
   Sello, Mpho Lucky Marlon (Logistics)
   Sibuyi, Bright (Transportation Management)

2. **Advanced Diploma**

   Choshi, Thabile (Logistics)
   Kabengele, Bakena (Business Management)
   Mabirimisa, Karabo Jimmy (Business Management)
   Makhura, Tiisetso Ivy (Transportation Management)
   Maleka, Kamogelo Cleophus (Transportation Management)
   Malokase, Tshepo (Business Management)

Mamatlepa, Nakedi Rosemond (Transportation Management)
Mashamaite, Tshegofatso Hope (Transportation Management)
Mathebula, Nsovo Tshembani Ombie (Business Management)
Mazibuko, Candy Thokozile (Management)
Mbatha, Ntombikayise Innocentia (Transportation Management)
Molaba, Mahlomola Aubrey (Transportation Management)
Monageng, Goitsemang Unique (Management)
Mothijoa, Reitumetse (Business Management)
Mugivhisa, Shandukani Sharon (Management)
Muusha, Kenneth Mandikudza (Transportation Management)
Mzizi ,Simphiwe Mpumelelo (Transportation Management)
Nenungwi, Tshifhiwa (Logistics)
Nkosi, Sihle Simangele (Business Management)
Pooe, Kutloano (Business Management)
Shema, Takalani (Logistics)
Zulu, Mandla Brightwell (Management)

3. **Bachelor of Commerce**

Kale, Phemelo (Logistics Management)
Maluleke, Nsuku (Logistics Management)
Ndlovu, Mitchell Sarallee (Logistics Management)

4. Bachelor of Commerce Honours

Kapu, Morokwane Martha (Logistics Management)
Kasambala, Mercy Thandeka (Transport Economics)
Kgoane, Reabetswe Recias (Transport Economics)
Maeko, Nthabiseng (Transport Economics)
Magabe, Tsatsanke Prudence (Logistics Management)
Mamba, Siyethaba Portia (Logistics Management)
Mashita, Lebogang Whitney (Logistics Management)
Nhlapo, Sibongile Buhle Petunia (Logistics Management)
Nkosi, Bongumosa Ndumiso Freeman (Logistics Management)
Phasha, Mamoile (Logistics Management)
Rasibitsi, Shirley Reitumetse (Logistics Management)
Setati, Lesiba Lesley (Transport Economics)

5. Postgraduate Diploma

Cele, Ndosi Pono (Business Management)
Magane, Mokebjane John (Business Management)
Masoka, Tshepo Eric (Business Management)
Mmoledi, Lucia Mphielo (Business Management)
Molefe, Kabelo Collen (Business Management)
Mwaniki, Evelyn Treasa Wangari (Business Management)

6. Master of Commerce

Khan, Azmina (Business Management)
Minor dissertation: Eventing in the age of the Fourth
Industrial Revolution: A shift to online
Supervisor: Mrs S Hughes

Lewis, Lucrecia Melanie (Business Management)
Minor dissertation: Challenges in implementing new
technologies in a contact centre environment
Supervisor: Prof GA Goldman

Mhlanga, Sipatisiwe (Business Management)
Minor dissertation: Strategic fit of human resources
structure in a private education company
Supervisor: Prof S Dhliwayo

Mokonyane, Motodi Daniel (Business Management)
Minor dissertation: Role of ethical leadership in promoting
good corporate governance
Supervisor: Mr LS Ngcobo

Ratlhagane, Kearabilwe Otlotleng (Business Management)
Minor dissertation: The influence of macro-environmental
factors on strategy implementation
Supervisor: Dr DH Boikanyo

7. Master of Philosophy

Mogashoa, Katlego (Business Management)
Dissertation: Entrepreneurial Orientation and SME performance
Supervisor: Prof V Kalitanyi

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
QUALIFICATIONS

1. Diploma | National Diploma

Mkansi, Bongani Abel (Engineering: Chemical)
Nyamende, Luyanda (Engineering: Electrical)

2. Bachelor's

Bhoodhia, Milan Ganpat (Mechanical Engineering)
Chirindza, Ezekiel (Mechanical Engineering)
Kataka, Caroline Kgomotso (Electrical and Electronic Engineering)
Mahlo, Rabogale Moses (Electrical and Electronic Engineering)
Mangene, Mahlatse Gabriel (Electrical and Electronic Engineering)
Martin, Allan Otto (Electrical and Electronic Engineering)
Mothapo, Makeleketla Matthews (Mechanical Engineering)
Ndingindi, Tafadzwa (Electrical and Electronic Engineering)
Nxumalo, Siyabonga (Electrical and Electronic Engineering)
Potgieter, Willem Albertus (Mechanical Engineering)
Ramonyai, Mokobodi Doliphas (Electrical and Electronic Engineering)

Ramuhashi, Kelvin (Mechanical Engineering)
Rebuzzi, Lorenzo Giovanni (Mechanical Engineering)
Shiridzinomwa, Kelvin Kundai (Mechanical Engineering)
Skosana, Johannes Thabo (Electrical and Electronic Engineering)
Suknandan, Manjilika (Electrical and Electronic Engineering)
Tembe, Nocebo (Electrical and Electronic Engineering)
Theledi, Harries (Mechanical Engineering)
Tseko, Khotsofalo Charles (Electrical and Electronic Engineering)

3. **Bachelor of Engineering Technology**

Bengwana, Tulasizwe (Electrical Engineering)
Dlamini, Kwenzokwakhe Lwazilwakhe (Industrial Engineering)
Malatji, Kgotsofatso Navan (Industrial Engineering)
Maseko, Elias (Mechanical Engineering)
Mini, Mbalentle (Chemical Engineering)
Mkhwanazi, Simangele Nosipho (Industrial Engineering)
Monareng, Nompumelelo Gladness (Industrial Engineering)
Mongwe, Albertinah Kgaugelo (Industrial Engineering)
Ngwenya, Seumo Lydie Badianne (Mechanical Engineering)
Nxumalo, Sambulo Sam (Industrial Engineering)
Sangweni, Joel Tafadzwa (Chemical Engineering)
Setlhabi, Kgomotso (Industrial Engineering)
Sibiya, Siphesihle Trinity (Industrial Engineering)

4. Bachelor of Engineering

Diab, Elie Najib (Electrical and Electronic Engineering)
Golele, Fumani Oscar (Electrical and Electronic Engineering)
Holpert, Liam (Mechanical Engineering)
Koza, Patrick Maliba (Mechanical Engineering)
Lehong, Matlou Tshepiso (Mechanical Engineering)
Mabasa, Rirhandzu Winny (Electrical and Electronic Engineering)
Mawer, Tshepo (Electrical and Electronic Engineering)
Motolo, Lefenya Petrus (Electrical and Electronic Engineering)
Nemukula, Rofhiwa (Mechanical Engineering)
Ngobeni, Chreighton Musa (Electrical and Electronic Engineering)
Sibanda, Mthabisi (Mechanical Engineering)

5. Bachelor of Science Honours

Dikobo, Boikgantsho (Quantity Surveying)
Dywaru, Khanyisana Tasha (Quantity Surveying)
Gaseichubelwe, Tsholofelo Sharon (Quantity Surveying)
Hills, Dewalt Richard (Mechanical Engineering)
Kweni, Kamvalethu Precious (Quantity Surveying)
Majwapula, Mzwandile (Construction Project Management)
Maphosa, Thandeka Perceviarance (Quantity Surveying)
Masinga, Elizabeth (Quantity Surveying)
Masinga, Siphamandla Adrian (Quantity Surveying)
Mavuso, Mbusozoyo Mthembeni (Industrial Engineering)

Mawelele, Kennilworth Mbuso Majan (Quantity Surveying)
Morgan, Willington Lerato (Quantity Surveying)
Ndoda, Usiphile (Quantity Surveying)
Peta, Sekwele George (Mechanical Engineering)
Seko, Athenkosi (Quantity Surveying)
Sengwane, Cassey Nakedi Thomas (Construction Management)
Tongo, Bonke (Quantity Surveying)
Tshite, Pegy Tshite Mbo (Quantity Surveying)
Zulu, Nkosephayo Nozibusiso (Quantity Surveying)

6. **Master of Technology (MTech)**

Chauke, Nhlamulo Vincet (Engineering: Mechanical)
Dissertation: Design development of a train pressure vessel to mitigate the problems of welding misalignment
Supervisor: Prof DVV Kallon
Co-supervisor: Mr TJ Kunene

Lelala Mnguni, Salamina Mpho (Engineering: Mechanical)
Dissertation: Intergration of catenary tracer to asses catenary wire conditions of passenger trains
Supervisor: Prof DVV Kallon
Co-supervisor: Dr A Mashamba

Ligopi, Octave Mombembe (Engineering: Chemical)
Dissertation: Microbial fuel cell performance on acid mine drainage using different carbon nanotube doped anodes
Supervisor: Prof K Moothi
Co-supervisor: Dr R Huberts

Makutu, Mpho Cacious (Engineering: Mechanical)
Dissertation: Use of plough scrapper and tiling device to scrape off material from the conveyor belts
Supervisor: Prof DVV Kallon
Co-supervisor: Mr T Miller

Motaung, Buti William (Engineering: Electrical)
Dissertation: Deep learning-based framework for improving video quality in digital broadcasting systems
Supervisor: Prof KA Ogudo
Co-supervisor: Dr CS Chabalala

Ndlovu, Zakhe Patrick (Engineering: Mechanical)
Dissertation: Determinants of successful implementation of risked based inspections for pressure equipment
Dissertation: Mr MC Nkosi
Co-supervisor: Prof LK Tartibu

Ngwenya, Abegail Nompumelelo (Engineering: Mechanical)
Dissertation: Analysis of the cooling performance of standing-wave thermo-acoustic systems
Supervisor: Prof LK Tartibu
Co-supervisor: Prof PA Olubambi

Nhambe, Sabelo Nkosinathi (Engineering: Mechanical)
Dissertation: Evaluating the effectiveness of water and air cooling techniques on energy conversion efficiency of solar PV panels
Supervisor: Mr E Bakaya-Kyahurwa
Co-supervisor: Mr T Miller

Ntshangase, Feliz Goodman (Engineering: Electrical)
Dissertation: Multi-objective control for a class E radio frequency amplifier
Supervisor: Prof TC Shongwe
Co-supervisor: Mr HP Van Ver Walt

Tityiwe, Alfonce Takawira (Engineering: Mechanical)
Dissertation: Evaluation of hybrid tower performance and effects on water and energy conservation
Supervisor: Dr CE Anghel
Co-supervisor: Dr LK Tartibu

7. **Master of Philosophy (MPhil)**

Tshitema, Ndalamo (Mechanical Engineering)
(with disctinction)
Dissertation: Development of underground rock bolt design
Supervisor: Dr DVV Kallon
Co-supervisor/s: Dr OT Lasiende

8. **Master of Engineering (MEng)**

Akinribide, Adebisi John (Micro-and Nanoelectronic Engineering)
Dissertation: Impact of Micro and nano Electronic Engineering on 5G and 6G Networks
Supervisor: Prof G Singh
Co-supervisor/s: Dr P Thakur

Berman, Terry Inbal (Electrical and Electronic Engineering)
Dissertation: Design and simulation of a low-cost biomedical ultrasound transducer
Supervisor: Prof S Rimer

Kucherera, Darryl Tapiwa (Electrical and Electronic Engineering)
Dissertation: Application of genetic and particle swarm algorithms in the design-optimization of permanent magnet assisted synchronous reluctance motors
Supervisor: Dr M Muteba
Co-supervisor/s: Dr D Modungwa

Makambo, John Beya (Mechanical Engineering) **(with disctinction)**
Dissertation: Performance and assessment of tandem Galnp/GaAs dual-junction solar cells using SCAPS-1D.
Supervisor: Prof TC Jen
Co-supervisor/s: Dr Pe Imoisili

Mokoena, Tebogo Fortune (Mechanical Engineering)
Dissertation: Design and study of the experimental hutch equipment for the BEATS beamline at SESAME
Supervisor: Dr M Bhamjee
Co-supervisor/s: Mr P Van Raenbergh

Muteba, Kalenga (Electrical and Electronic Engineering) **(with disctinction)**
Dissertation: Design and analysis of a new optimized blockchain network topology to mitigate complex scalability and predict cyber attacks
Supervisor: Prof K Ogudo

Naude, Francois Johan (Electrical and Electronic Engineering) **(with disctinction)**
Dissertation: The utilisation of a digital twin in the asset management of continuous miners
Supervisor: Prof F Von Solms
Co-supervisor/s: Prof J Meyer

Olofin, Tosin Waidi (Mechanical Engineering)
Dissertation: Analysis of performance yield and cost benefits of solar photovoltaic modules
Supervisor: Dr OM Longe
Co-supervisor/s: Prof TC Jen

Onifade, Moses Tunde (Mechanical Engineering)
Dissertation: Optimised bio-diesel production from blighia sapida seed oil using a heterogeneous catalyst
Supervisor: Dr N Madushele
Co-supervisor/s: Dr O Ogunkunle

Opetubo, Oriyomi Rasak (Mechanical Engineering)
Dissertation: Development and investigate of V-Ni-Zr composite membrane for hydrogen purification: first principle method
Supervisor: Prof TC Jen
Co-supervisors: Dr S Oyinbo

Parsotam, Mayank (Mechanical Engineering)
Dissertation Proposed framework for the implementation of a design
management framework in Oil and Gas industry
Supervisor: Dr BW Botha

Rapudu, Thabang Coleen (Electrical and Electronic Engineering)
Dissertation: Ternary variable-to-fixed length balancing scheme with simple encoding and decoding
Supervisor: Prof TG Swart
Co-supervisor/s: Dr E Ngomseu Mambou

Sikhonde, Mabushu Johannes (Electrical and Electronic Engineering)
Dissertation: Transient and steady-state analysis of a line-start synchronous reluctance motor with mixed stator winding arrangements
Supervisor: Dr M Muteba

Sun, Li (Electrical and Electronic Engineering)
Dissertation: Ultraviolet index-based photovoltaic power forecasting using an optimized artificial neural network
Supervisor: Prof Y Sun

9. **Doctor of Engineering**

Moonga, Kando Hamiyanze (Mechanical Engineering)
Thesis: Investigation of the cold gas dynamic spray technique for the fabrication of a thin film for a plasmonic biosensor
Supervisor: Prof TC Jen

10. **Doctor Philosophiae (DPhil)**

Tengey, Clement (Electrical and Electronic Engineering)
Thesis: Efficiency and productivity assessment of electrical power distribution regions in Ghana
Supervisor: Dr OM Longe
Co-supervisors: Prof O Adepoju

11. **Doctor of Philosophy (PhD)**

Adeyemi, Benjamen Sunkanmi (Construction Management)
Thesis: An integrated conflict management model for the South African construction industry
Supervisor: Prof CO Aigbavboa
Co-supervisor: Prof WD Thwala
Co-supervisor: Prof J Mahachi

Afolabi, Oluwatobi Joshua (Electrical and Electronic Engineering)
Thesis: Detecting glaucoma from fundus images using a novel U-Net lite model and machine learning algorithms
Supervisor: Prof FV Nelwamondo
Co-supervisors: Dr GP Mabuza-Hocquet

Burger, Andre (Mechanical Engineering)
Thesis: Internal balance analysis and performance metrics using force-functions **Supervisor:** Dr FF Pieterse
Co-supervisors: Dr PM Bidgood

Dithebe, Khotso (Construction Management)
Thesis: A maintenance management model for public office buildings in South Africa **Supervisor:** Prof CO Aigbavboa
Co-supervisors: Prof WD Thwala

Ileberi, Emmanuel (Electrical and Electronic Engineering)
Thesis: Improved machine learning methods for enhanced credit card fraud detection **Supervisor:** Prof Y Sun
Co-supervisors: Prof Z Wang

Matanga, Ngoma Yves (Electrical and Electronic Engineering)
Thesis: Convergence improvement in global optimisation with applications to control systems
Supervisor: Prof Y Sun
Co-supervisors: Prof Z Wang

Mbazor, David Ngwoke (Construction Management)
Thesis: A quality assurance management model for adequate housing delivery in Nigeria
Supervisor: Prof CO Aigbavboa
Co-supervisors: Prof WD Thwala and Dr DO Aghimien

Mouchou Tchamdjeu, Rosine (Mechanical Engineering)
Thesis: Development of nanostructured metal oxide thin films solar cells for photovoltaic applications
Supervisor: Prof TC Jen
Co-supervisors: Prof OT Laseinde and Dr KO Ukoba

Muthelo, Rudzani Glen (Quantity Surveying)
Thesis: An integrated decision-making model for evaluating public sector construction bids in South Africa
Supervisor: Prof CO Aigbavboa
Co-supervisors: Prof B Awuzie and Prof WD Thwala

Nkambule, Mpho Sam (Electrical and Electronic Engineering)
Thesis: Improving power quality for a grid connected photovoltaic system using artificial intelligence techniques
Supervisor: Dr AN Hasan
Co-supervisors: Dr A Ali

Olatunji, Kehinde Oladoke (Mechanical Engineering)
Thesis: Experimental evaluation and modelling of energy recovery from Arachis hypogea (groundnut) shells
Supervisor: Prof DM Madyira
Co-supervisors: Prof AN Ahmed

Quayson, Jeriscot Henry (Construction Management)
Thesis: A framework for the selection of a suitable procurement system for construction projects delivery in Ghana
Supervisor: Prof CO Aigbavboa
Co-supervisors: Prof WD Thwala

Sagming, Marcel Nkamngang (Electrical and Electronic Engineering)
Thesis: Using topological data analysis and machine learning to predict customer churn
Supervisor: Prof R Heymann
Co-supervisors: Dr MV Visaya

Ukpoju, Emmanuel Adikwu (Construction Management)
Thesis: An evaluation of sustainable domestic solid waste management practices in Uyo, Akwa Ibom State, Nigeria
Supervisor: Prof CO Aigbavboa
Co-supervisors: Dr EE Agbenyeku and Dr M Ramabodu

Moonga, Kando Hamiyanze **DIng** (Mechanical Engineering)

Moonga, Kando Hamiyanze obtained a bachelor's degree in mechanical engineering from the University of Zambia (UNZA), Lusaka, Zambia, in 2005, he then worked for Otis elevators for 2 years as a field engineer before joining academics and proceeding to master's degree study. He was awarded a master of Control Theory and Control Engineering in 2012 from the College of Automation Sciences and Engineering, South China University of Technology (SCUT), Guangzhou, China. Upon Completion of the master's degree, he joined as a faculty member in the school of engineering at the University of Zambia where he teaches Control Systems, Vibrations and Dynamical Systems.

The candidate's doctoral research focused on the fabrication of thin films for plasmonics biosensors using the cold gas dynamics spray additive manufacturing process. The main focus was to identify the functional properties of cold spray coatings, and the selection of manufacturing parameters that are relevant for thin films in the plasmonics biosensors. Thus the candidate identified relevant variables to control the interface, and the surface; and residual stresses to achieve desired functionality in the plasmonics thin films.

Supervisor: Prof TC Jen

Tengey, Clement **PhD** (Electrical and Electronic Engineering Science)

Clement Tengey obtained a Higher National Diploma (HND) in Electrical/Electronic Engineering from Cape Coast Polytechnic, Ghana in 2002. He later proceeded to obtain a Bachelor of Engineering (BEng) in Electrical/Electronic Engineering from the Kwame Nkrumah University of Science and Technology, Ghana in 2013 and a Master of Science (MSc) in Engineering & Management from Coventry University, United Kingdom in 2015. He is currently an assistant lecturer at Accra Technical University, Ghana. He is also a cooperate member of the Ghana Institute of Engineers, from 2018 to date.

Clement Tengey's doctoral research focused on the assessment of efficiency and productivity in electrical power distribution using different Data Envelopment Analysis techniques to determine how input variables contribute to efficiency and productivity in the Ghanaian grid context. The study further determined how various environmental factors, which have not been taken notice of over the years affected power distribution efficiency. Findings from the study revealed that the productivity growth of electrical distribution regions in Ghana was driven by technology and innovation such as network improvement, tariff adjustment, and the use of prepayment meters. Also, the study established that electric power consumption negatively impacts efficiency with an increase in consumption, which was attributed to an extreme high level of system losses. Additionally, the results from the thesis have yielded two journal publications in ISI/Scopus-listed journals.

Supervisor: Dr OM Longe
Co-Supervisor: Prof O Adepoju

Adeyemi, Benjamen Sunkanmi **PhD** (Construction Management)

Benjamen Sunkanmi Adeyemi obtained his Bachelor of Technology in Quantity Surveying (2015) from the Federal University of Technology, Akure, Ondo State, Nigeria. He obtained his Masters of Technology in Construction Management (2019) with a Distinction at the University of Johannesburg, South Africa. He is a registered member of the Golden Key International Honour Society. He was awarded the 2019 Dean's Prestige Award for academic excellence and recognition of exceptional achievement on the dean's honour roll by the Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa. He has published several peer-reviewed academic articles, such as conference papers, journal articles, and book chapters.

The candidate developed an integrated conflict management model for the South African construction industry. The study utilised a mixed-methods research approach, comprising both quantitative and qualitative methods of data collection. In the study, a seven-factor model was developed to determine the extent to which work culture, communication, leadership qualities, organisational structure, decision-making, strategic thinking, and team building predict conflict management in the South African construction industry. The model was validated using structural equation modelling (SEM). The study recommends that construction stakeholders, governments, non-governmental organisations, and policymakers should consider the empirically validated constructs as they are intended for and practise conflict management in the construction industry. In

addition, training programmes intended to advance conflict management understanding in the South African construction industry should also be considered.

Supervisor: Prof CO Aigbavboa
Co-Supervisor: Prof WD Thwala / Prof J Mahachi

Afolabi, Oluwatobi Joshua **PhD** (Electrical/Electronic Engineering Science)

Afolabi Oluwatobi Joshua obtained his Bachelor of Science degree (BSc.(Hons)) in Electrical/Electronic Engineering Science from the University of Ibadan and proceeded to complete his Masters (Cum Laude) and Doctorate degree in the same field at the University of Johannesburg. He is currently a senior data scientist in one of the leading supply-chain optimization companies in South Africa.

Glaucoma, a leading cause of blindness worldwide, is an irreversible eye disease that demands early detection and treatment to avoid permanent vision loss. This research employed image-processing techniques and deep-learning models to develop a novel and efficient approach for the early detection of Glaucoma. The deep learning model called 'U-Net Lite,' accurately segments fundus images and can detect the disease in its early stages with an accuracy of 94%, surpassing other state-of-the-art models like DenseNet, Xception, and ResNet. With these results, patients can receive prompt treatment to prevent further damage to their eyesight. The study has been published in a book chapter, two journals, and three conferences, with over 250 citations and over 10,000 reads on research gate. This research provides a promising solution to the detection and treatment of glaucoma, emphasizing the potential of artificial intelligence and image processing in modern medicine.

Supervisor: Prof FV Nelwamondo
Co-supervisors: Dr GP Mabuza-Hocquet

Burger, André **D.Ing** (Mechanical Engineering)

André Burger obtained his B.Eng degree in 2012 and M.Eng degree (with distinction) in 2015 in Mechanical Engineering from the University of Johannesburg. He joined the Council for Scientific and Industrial Research (CSIR) as a Research and Development (R&D) Engineer. In 2022 he was appointed as the lead wind tunnel balance engineer for the Defence and Security Cluster of the CSIR. In this role, he provides the primary strategic and technology leadership in the wind-tunnel balance technology arena.

Consensus on internationally accepted wind tunnel balance calibration, evaluation, and uncertainty estimation practices remains to be achieved. Non-standard balance calibration and performance estimation practices coupled with ambiguous definitions of balance performance metrics complicate efforts to investigate and validate the load prediction uncertainty (accuracy statements) of a supplied balance independently from the balance vendor. The research focused on developing an objective and calibration data-independent method to evaluate the performance of wind tunnel balances. The candidate developed a novel and original force function based balance evaluation approach. The referenced and immutable nature of the proposed evaluation approach facilitates comparative studies that can evaluate the performance of balance uncertainty data supplied by any balance vendor or in any calibration facility. The thesis examiners from the University of Pretoria, Nasa Ames, and Nasa Langley, concurred that the

suggested evaluation approach could be implemented as the basis for inter-laboratory balance evaluations and comparisons.

Supervisor: Dr FF Pieterse
Co-Supervisor: Dr PM Bidgood

Dithebe, Khotso **PhD** (Construction Management)

Khotso Dithebe obtained an MTech degree in Construction Management (*cum laude*), from the University of Johannesburg, South Africa, in 2018. In 2019, he received the Chancellor's Medal for the Most Meritorious Master's Study in the Faculty of Engineering and Built Environment. In the same year, he also received an award for the best master's student in 2018 in the Department of Construction Management and Quantity Surveying. During his doctoral studies, he published peer-reviewed papers, and he is currently writing journal papers on the maintenance management of public office buildings in South Africa.

In his study, the candidate developed a maintenance management model for public office buildings in South Africa. The model determined the influence of building maintenance policy, resource management strategy, maintenance task execution and control, continual performance improvement, and stakeholder coordination in predicting the outcomes of maintenance management. The Delphi study and questionnaire survey were used to develop the five-factor model. The survey was analysed using structural equation modelling, which determined the relationship between variables. The findings demonstrated that failing to consider the contribution of maintenance personnel during the planning stage increased and contributed to the existing maintenance backlog and maintenance operation costs of public buildings. Thus, for public institutions to produce buildings that can contribute towards improved building performance and building asset value, the

Department of Public Works and Infrastructure (DPWI) must understand and implement maintenance management as a procedure that is guided by building maintenance policy and where stakeholders are tasked with the management of resources and continual performance improvement of activities during the execution of maintenance to restore and improve the condition and functionality of public office buildings to a state in which the buildings can optimally perform their required function.

Supervisor: Prof CO Aigbavboa
Co-supervisor: Prof WD Thwala

Ileberi, Emmanuel **PhD** (Electrical and Electronic Engineering)

Emmanuel Ileberi received his B.Sc. in information technology engineering in 2017 and M.Sc. in Telecommunication Systems and Computer Networks in 2018, both from the Belarusian State University of Informatics and Radio electronics, Minsk, Belarus. In 2020, he commenced his PhD in the Department of Electrical and Electronic Engineering Science at the University of Johannesburg.

His research aimed to apply machine learning algorithms for enhanced credit card fraud detection. After identifying how the class imbalance problem impacts the performance of machine learning models, which has slowed down the application of machine learning in predicting credit card fraud, the research developed both data-level and algorithm-level techniques to efficiently detect fraudulent transactions. Some of the contributions and methods developed in the course of the research include a genetic algorithm (GA) based feature selection method, which uses the random forest algorithm as the fitness function in the GA implementation, and a Synthetic Minority over-sampling Technique coupled with Adaptive Boosting algorithm for effective data resampling and classification. The proposed methods contribute to machine learning research as they obtained better classification performance compared to traditional machine learning algorithms and some techniques in recent literature. In the course of the research, two (2) DHET-accredited journal papers have been published.

Supervisor: Prof Y Sun
Co-Supervisor: Prof Z Wang

Matanga, Ngoma Yves **(PhD)** Electrical and Electronic Engineering

Yves Matanga earned a bachelor's degree in electrical engineering from the Tshwane University of Technology in 2014. He then pursued a double master's degree in collaboration with the French South African Institute of Technology at the same university, graduating in 2018 before enrolling in a PhD program in Electrical and Electronic Engineering at the University of Johannesburg, South Africa the same year. His research interests include control and dynamic systems, optimisation theory, artificial intelligence, signal and image processing.

The PhD research focused on improving global optimization techniques for solving nonconvex multimodal continuous functions with applications in control systems, particularly in optimal control and fractional order PID tuning. His research resulted in the creation of three novel algorithmic enhancements. These are a semi-concurrent sequential niching approach with improved solution accuracy and computational efficiency, a topologically informed multi-swarm PSO algorithm with improved peak detection rate, and a hybrid stochastic deterministic PSO-αBB algorithm with improved convergence speed in its complete search configuration and superior solution accuracy in its heuristic search configuration. These algorithms can improve solution search capabilities when solving nonconvex multimodal continuous optimization problems in general, and in practical problems in control systems and other fields.

Supervisor: Prof Y Sun
Co-supervisor: Prof Z Wang

Mbazor, David Ngwoke **PhD** (Construction Management)

David Ngwoke Mbazor earned his B.Tech in Estate Management (1998) from the Federal University of Technology Minna, Nigeria, Master of Business Administration (2004) from the University of Calaber, Nigeria, MSc in International Project Management (2012) from the Glasgow Caledonian University, Scotland, UK, and PhD in Construction Management (2023) from the University of Johannesburg, South Africa. He is an associate member of the Nigerian Institution of Estate Surveyors and Valuers and a licenced Estate Surveyor and Valuer. David is a lecturer at the Federal University of Technology, Akure, Nigeria. He has several peer-reviewed journals and conference publications.

The candidate developed a quality assurance management model (QAMM) to aid practitioners and policymakers in the housing sector in ensuring the delivery of adequate housing for the growing population. The QAMM was theorised from a comprehensive review of extant literature and then validated through a two-round Delphi study and a structural equation modelling (SEM) analysis of the primary data gathered for the study. The model theorised that a housing delivery process that will satisfy adequacy needs, ensure value for investment, create user satisfaction, and attain a competitive advantage must be anchored on five core functions: organisational leadership and management, customer focus management, building stakeholder management, workforce coordination and management, and team competency management. This study recommends that stakeholders in the housing sector focus on

developing the required capacities in order to be responsive to the five-factor model developed in the research.

Supervisor: Prof CO Aigbavboa
Co-supervisors: Prof WD Thwala / Dr DO Aghimien

Mouchou Tchamdjeu, Rosine **PhD** (Mechanical Engineering Science)

Rosine Mouchou Tchamdjeu obtained her bachelor's degree (B-Tech) in Industrial Engineering (2015) from the University of Johannesburg and her master's degree (M- Tech) in Industrial Engineering from the University of Johannesburg (2019). Rosine is a member of the Engineering Council of South Africa (ECSA). She was a temporary lecturer in the Department of Industrial and Mechanical Engineering, where she completed her Bachelor's and master's degrees. Rosine registered for her Ph.D. in 2019 Mechanical Engineering Science from UJ. One book chapter, one journal, and three Scopus-indexed conference proceedings) have been published from this Ph.D. study.

This thesis focused on developing nanostructured metal oxide thin films solar cells for photovoltaic applications. The motivation for the study stern from the fact that electrical energy is the bedrock of the fourth industrial revolution (4IR), which the University of Johannesburg is at the forefront in helping South Africa actualize this goal. Also, the study is coming at a time when South Africa is looking for an alternate and clean source of electricity. This search for an alternative is linked to the load shedding, coal shortages and the environmental impact of coal on the carbon footprint of the country. South Africa's geographical location, positions it for an unlimited supply of affordable and clean electricity, using solar energy. Nanotechnology and new solar cell materials were used in the study to develop new solar cells. The methodology involved the

deposition of the nanostructured metal oxide of Nickel and Copper using spin coating.

Rosine Mouchou's doctoral studies focused on the development of nanostructured metal oxide thin films solar cells for photovoltaic applications. The study covered the whole course of the device fabrication, characterization, and analysis. Simulation modeling and laboratory experiment were done. The experiment results were compared and evaluated with the simulated results. A critical enabling technology associated with this new development is Atomic Layer Deposition (ALD), involving depositing ultrathin layer for membrane development. The developed solar cell will provide clean and affordable electricity, thereby reducing incessant load shedding experienced and solve rural and urban energy issues.

Supervisor: Prof TC Jen
Co-Supervisor: Prof OT Laseinde
Co-Supervisor: Dr. OK Ukoba

Muthelo, Rudzani Glen **(PhD)** Quantity Surveying

Muthelo Rudzani obtained his National Diploma in Building (Cum Laude), a BTech and MTech degree in Quantity Surveying all from the Tshwane University of Technology, South Africa. He was awarded the Dean's List Scholarship in 2013 as a top-achieving student in the Faculty of Engineering and the Built Environment. He is also a registered Professional Construction Project Manager with the South African Council for the Project and Construction Management Profession and a candidate Quantity Surveyor with the South African Council for the Quantity Surveying Profession.

The candidate developed an integrated decision-making model for evaluating public-sector construction bids. Multivariate statistics techniques were employed to analyse the collected primary data. The developed integrated model is a nine-factor construct along with the main criteria that influence the selection of an adequate contractor. These main criteria comprise Price, Quality, Health and Safety, Experience, Technical Ability, Management Capabilities, Human Resources as well as plant and Equipment attributes. This study recommends to public institutions, desirous of achieving their primary and secondary procurement objectives, to use standard set of criteria to evaluate the adequacy of the bidding contractors. The study contributes to the discussion on bids evaluation in the South African construction industry and developing countries.

Supervisor: Prof CO Aigbavboa
Co-supervisor: Prof B Awuzie

Nkambule, Mpho Sam **PhD** (Electrical and Electronic Engineering)

Mpho Nkambule is currently a senior electrical, control and instrumentation engineer at Erudite, which is a mining engineering consulting firm. He holds Bachelor of Engineering Technology *(Cum laude)* and Master of Philosophy *(Cum laude)* degrees in Electrical and Electronic Engineering, both from University of Johannesburg. He has just completed his PhD in Electrical and Electronic Engineering in the field of renewable energy, power electronics, and artificial intelligence at the University of Johannesburg under the supervision of Dr Ali Hasan and Dr Ahmed Ali. The research resulted in three Journal articles, two book chapters, and two conference papers.

Mpho's PhD research focused on the application of artificial intelligence and machine learning algorithms in the field of renewable energy. The main contribution of his work is improving power quality for a grid-connected photovoltaic (PV) system using artificial Intelligence techniques. His work introduced new hybrid maximum power point tracking algorithms with an assertive restart condition to track PV system global power peak under partial shading conditions using real-time data. The research also introduced novel inverter control algorithms with self-adapting capabilities for controlling the interfacing inverter of a grid-integrated bifacial PV system to reduce the current and voltage total harmonics distortion and enhance the quality of power. Furthermore, the research introduces the enhanced dual second-order generalized integrator phase-locked loop for improving grid synchronization

and symmetrical components estimation under steady-state and transient states. The research yielded three Journal articles, two book chapters, and two conference papers.

Supervisor: Dr AN Hasan
Co-Supervisor/s: Dr A Ali

Olatunji, Kehinde Oladoke **PhD** (Mechanical Engineering)

Kehinde Oladoke Olatunji obtained his MTech in Agricultural Engineering from Ladoke Akintola University of Technology, Ogbomoso, Nigeria, in 2019. After that, he registered for his Ph.D. in Mechanical Engineering in 2020 at the University of Johannesburg. He is a corporate member of the Nigeria Institution of Agricultural Engineers and the Nigeria Society of Engineers. He is a Professional Engineer registered with the Council for the Regulation of Engineering Practice in Nigeria (COREN). His research interests are energy recovery from agricultural residues and other organic wastes, optimization of renewable energy recovery, statistical modelling, and artificial intelligence.

The total reliance on fossil fuels has led to global warming and is already threatening the ecosystem. The candidate's research focused on energy recovery from *Arachis hypogea* (Groundnut) shells as renewable energy that can substitute fossil fuels. It is a lignocellulose material that is difficult to digest. Therefore, different pretreatment methods were applied to the feedstock before anaerobic digestion, and the biogas and methane yields were used to validate RSM, ANN, and ANFIS models developed. It was observed that *Arachis hypogea shell* is an excellent potential feedstock for biogas production, and pretreatment methods can increase its biogas and methane yield. The developed models were discovered to be able to predict biogas and methane yields of *Arachis hypogea* shells when the process parameter of pretreatment is involved. The pretreatment

methods and models developed can be applied at the industrial scale to reduce the world's carbon footprint.

Supervisor: Prof. DM Madyira
Co-Supervisor: Prof. NA Ahmed

Quayson, Jeriscot Henry: **PhD** (Construction Management)

Jeriscot Henry Quayson graduated from the Cape Coast Polytechnic, Ghana, with a Higher National Diploma in Building Technology in 2002. In 2013, he earned a BTech in Building Technology from the Kwame Nkrumah University of Science and Technology and a master's in engineering project management from Coventry University, UK (2015). He started teaching at the Cape Coast Technical University, Ghana, in 2008 as a technician and was promoted to a lecturer position in 2016. He is a member of the Institution of Engineering and Technology, Ghana (M.PE-IET, GH), as well as the Ghana Institution of Construction (MGIOC). He enrolled for his doctoral studies at the University of Johannesburg, South Africa, in 2019. The candidate has published three journal articles based on his doctoral studies.

The candidate developed a framework for the selection of procurement systems (SoPS) for construction project delivery in Ghana. The model was theorised from a comprehensive review of the existing literature. It was validated through a two-round Delphi study and a structural equation modelling (SEM) analysis of the primary data for the study. The findings from the SEM analysis, which modelled the outcomes of the selection of procurement systems for construction project delivery as a nine-factor model. The findings showed that the attributes of client, cost, time, risk, project characteristics-related, external environment, procurement planning, tendering method, and sustainability-related factors were found to have a significant influence in determining the selection of procurement systems

for construction project delivery in developing countries such as Ghana. The study concluded that the nine-factor model represents an adequate description of the selection of procurement systems for construction projects delivery in Ghana. The major contribution of the study is the development of an integrated framework for achieving the selection of procurement system for construction projects delivery in developing countries a case study of Ghana.

Supervisor: Prof CO Aigbavboa
Co-supervisor: Prof WD Thwala

Sagming, Marcel Nkamngang **PhD** (Electrical and Electronic Engineering)

Marcel Nkamngang Sagming was born in Cameroon, and he is currently a South African permanent resident and an Application Engineer in the Western Cape province. In 2011, he obtained a certificate in computer programming from Boston College in South Africa. From 2014 to 2017, he completed and obtained a BSc in information technology (cum laude) and a BEng in electrical and electronic engineering with IT (cum laude), from the University of Johannesbug (UJ). Furthermore, he obtained a master's degree in electrical and electronic engineering (cum laude) in 2019 at UJ and later completed a Ph.D. in Electrical and Electronic Engineering at UJ in 2023.

Marcel Nkamngang Sagming completed his Ph.D. in the field of Electrical and Electronic Engineering, titled "Using Topological Data Analysis and Machine Learning to Predict Customer Churn", under the supervision of Prof. R. Heymann and Dr. V. Visaya. The Ph.D. introduced a novel and optimised churn prediction technique that combines tuned hyperparameterized machine learning algorithms and topological data analysis. In particular, the information on the shape of customer data is included in the machine learning algorithms. The constructed shape summary uses the 0− and 1−dimensional holes of the topological structure of customer data and is encoded as barcode statistics. Customer churn is a serious problem across many telecommunications industries. The research findings directly benefit the telecommunications industries and when fully implemented, the research has the potential to help

telecommunications industries employ strategies and decisions to substantially mitigate the occurrence of customer churn which will result to increased annual revenue.

Supervisor: Prof R Heymann
Co-Supervisor: Dr V Visaya

Ukpoju, Emmanuel Adikwu **PhD** (Construction Management)

Emmanuel Ukpoju earned his B.Eng in Agricultural and Environmental Resources Engineering in 2007 from the University of Maiduguri, Nigeria, and a Master's Degree in Agricultural Engineering in 2013 from the University of Ilorin, Nigeria. In 2018, he enrolled for his doctoral studies in Construction Management at the University of Johannesburg, with a focus on Sustainable Domestic Waste Management Practices. He is a corporate member of the Nigeria Society of Engineers (NSE), the Nigeria Institution of Agricultural Engineers (NIAE), and the American Society of Agricultural and Biological Engineers (ASABE).

The candidate's thesis developed a framework for sustainable management of domestic solid wastes generated in Uyo, Akwa-Ibom State, Nigeria. The candidate employed multivariate statistical techniques in the analysis of the primary data collected for the study. The study found that the main constraints to a sustainable domestic solid waste management practice are low levels of public awareness, incoherent government policies, and obsolete equipment and machinery. The rise in the population of the city poses a danger to the uptick in solid domestic waste. Overall, the thesis identified the significant factors posing threats to the environmental sustainability and public health of Uyo State residents. Furthermore, the findings offer a platform for the advancement of research in the efficient management of municipal solid waste. Four (4) manuscripts from the outcomes of his study have been prepared for publication in ISI journals.

Supervisor: Prof CO Aigbavboa
Co-Supervisor: Dr EE Agbenyeku
Co-Supervisor: Dr S Ramabodu

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The Future Reimagined

National Anthem
of South Africa

Nkosi sikelel' Afrika
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.