



# Graduation Programme

The Future. Reimagined.



UNIVERSITY  
OF  
JOHANNESBURG

## Dear UJ Graduates

Your journey to this point has been an important lesson in leadership. As I have iterated often, learning, knowledge and leadership are an essential mix and those who do not know, cannot lead. Our objective has been to empower you as leaders who are primed to face the challenges of the 4IR and explore the opportunities that this new era presents both locally and internationally. This is an exciting adventure, let me assure you that the world you are entering is abundant with opportunities, and of course, challenges.

This graduation is rather special. Though we still find ourselves in a strange setting, still fighting an invisible and relatively unknown threat and still gripped with a sense of uncertainty, there does seem to be a glimmer of hope on the horizon. This represents our first cohort of in-person graduations in two years. As we celebrate your attainment of a major milestone, we are cognisant of the sheer resilience you have demonstrated against a tumultuous context – one defined by loss, anguish and seismic shifts in the way we live and work. A graduation ceremony is an important precursor to the next chapter of your lives. It is warming to be able to celebrate this achievement today with you in person as opposed to the digital modes that have defined much of the pandemic so far.

I want to take this opportunity to remind you that as a graduate, you join a small elite in our country. This is really something to celebrate. Though the odds seemed stacked against you, you persevered and not have the potential to address some of the greatest scourges of our time. You have chosen well – a qualification from UJ will hold you in good stead!

UJ has grown into a world-class, internationally recognised university with

more than 50 000 students registered. Our global stature and academic depth and footprints are acknowledged by reputable higher education ranking systems in the world. You emerge today as the world including us in South Africa, is in a period of deep change. UJ is leading the charge in the Fourth Industrial Revolution (4IR) and creating a cohort of graduates who are agile, curious and able to be active participants in a technology driven and digital environment.

At UJ, you have encountered some of the finest South African and international academic minds. You have participated in technology-rich learning, which compares favourably to the very best in global higher education.

We welcome you as a new member of the global UJ alumni community where you will join a worldwide body of professionals, many of whom are leaders in their fields. I encourage you to join the UJ Alumni Network and become an active member of the University Convocation. By staying actively engaged with UJ, you can make a real contribution to our academic projects and to those who will study at UJ after you.

It is exciting to once again commence this time-honoured tradition. Congratulations on this inspiring achievement and the best of luck with your next chapter!



**Prof Tshilidzi Marwala**  
**Vice-Chancellor and Principal**  
**University of Johannesburg**

**Welcome to the  
Graduation Ceremony of the  
University of Johannesburg  
12 October 2022 at 09:30**

**Welkom by die  
Gradeplegtigheid van die  
Universiteit van Johannesburg  
12 Oktober 2022 om 09:30**

**Le a Amogelwa  
Moletlong wa Dikapešo wa  
Yunibesithi ya Johannesburg  
12 Diphlane 2022 ka 09:30**

**Niyamukelwa  
eMcimbini wokweThweswa kweZiqu  
weNyuvesi yaseJohannesburg  
12 kuMfumfu 2022 ngele-09:30**

# **UNIVERSITY OF JOHANNESBURG**

## **CHANCELLOR**

Dr P Mlambo-Ngcuka

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

## **SENIOR OFFICE-BEARERS OF THE UNIVERSITY**

### **VICE-CHANCELLOR AND PRINCIPAL**

Prof T Marwala

BS Eng (Case Western Reserve USA), MEng (UP), PhD (Cambridge UK)

### **DEPUTY VICE-CHANCELLOR ACADEMIC**

Prof LG Mpedi

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

### **DEPUTY VICE-CHANCELLOR: RESEARCH AND INTERNATIONALISATION**

Prof S Sinha

BEng, MEng, PhD (UP)

### **REGISTRAR**

Prof IC Burger

BA, HEd, BA Hons, MA, PhD (RAU)

### **CHIEF FINANCIAL OFFICER**

Ms N Mamorare

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

## **CHIEF OPERATING OFFICER**

Dr M Ralephata

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

## **SENIOR EXECUTIVE DIRECTOR**

Dr N Vukuza

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

## **GENERAL COUNSEL**

Mr D Pretorius

BCom, LLB, LLM (NWU)

## **EXECUTIVE DEANS**

### **COLLEGE OF BUSINESS AND ECONOMICS**

Prof D van Lill

BSc, BSc Hons, MSc, PhD (US)

### **FACULTY OF ART, DESIGN AND ARCHITECTURE**

Prof S Laurent

BFA (l'Ecole Boulle, Paris), MFA (ENS, Paris-Saclay),  
MPhil, PhD (Université Panthéon-Sorbonne, Paris),

### **FACULTY OF EDUCATION**

Prof N Petersen

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

## **FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT**

Prof DJ Mashao

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

## **FACULTY OF HEALTH SCIENCES**

Prof S Khan

BSc, BSc Hons, MSc, PhD (UWC)

## **FACULTY OF HUMANITIES**

Prof K Naidoo

BA, BA Hons, MA, PhD (University of Manchester, UK)

## **FACULTY OF LAW**

Prof W Domingo

B SoSc (UCT), LLB (UWC), LLM (Columbia, USA),  
SJD (Winsconsin-Madison, USA)

## **FACULTY OF SCIENCE**

Prof D Meyer

BSc, BSc Hons, MSc (RAU), PhD (California USA)

## **DEAN**

## **JOHANNESBURG BUSINESS SCHOOL**

Prof R Carolissen

MSc (UWC), MBA (SUN), MCom (NWU), PhD (UWC)

# **MEMBERS OF COUNCIL**

## **CHAIRPERSON**

Mr MS Teke

## **DEPUTY CHAIRPERSON**

Dr Y Ndema

## **MEMBERS**

Prof H Abrahamse

Mr FM Baleni

Ms S Dlamini

Ms K Gugushe

Prof D Hildebrandt

Ms X Kakana

Mr M Khoza

Ms K Khumalo

Ms B Madikizela

Mr M Mahlasela

Mr M Manana

Prof T Marwala

Prof LG Mpedi

Mr LM Mpunzi

Ms N Molope

Ms Z Mthembu

Dr WP Rowland

Ms J Schreiner

Prof A Strydom

Ms C Tshilande

## **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!



# FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

## QUALIFICATIONS

### 1. National Diploma

**Bilankulu**, Nyumani Shame (Engineering: Mechanical)

**Coward**, Thomas Brian (Engineering: Mechanical)

**Maboko**, Thotogelo Magomarele (Engineering: Mechanical)

**Mokone**, Koketso (Engineering: Mechanical)

**Naidoo**, Alexander Daniel (Engineering: Mechanical)

**Radebe**, Mxolisi Nelson (Engineering: Chemical)

**Randell**, Brendon Wharton (Engineering: Mechanical)

### 2. Bachelor's:

**Lekota**, Koketso James (Urban and Regional Planning)

**Magubane**, Tsepang (Urban and Regional Planning)

**Molaba**, Judida (Urban and Regional Planning)

**Sebola**, Matome Elsa (Urban and Regional Planning)

**Socishe**, Nosabatha Princess (Urban and Regional Planning)

### 3. Bachelor of Engineering Technology

**Baloyi**, Jabu Doctorly (Electrical Engineering)  
**Chauke**, Nhlanhla Marvin (Electrical Engineering)  
**Dimba**, Ayanda (Mechanical Engineering)  
**Dube**, Velile Julie (Mechanical Engineering)  
**Hlatshwayo**, Abednego (Mechanical Engineering)  
**Hlungwani**, Millet Hletelo (Industrial Engineering)  
**Hosene**, Kopano Itumeleng (Electrical Engineering)  
**Khanyile**, Ndondo (Industrial Engineering)  
**Khathwayo**, Nomthamdazo Antoneitte (Electrical Engineering)  
**Khwatshube**, Siphokuhle (Industrial Engineering)  
**Leteketoa**, Lehlohonolo Eric (Electrical Engineering)  
**Lindeque**, Gerrit (Electrical Engineering)  
**Mafoho**, Dimakatso (Industrial Engineering)  
**Mahlake**, Rorisang Mosa (Industrial Engineering)  
**Makhode**, Vhahangwele Benedict (Industrial Engineering)  
**Makobe**, Themba (Industrial Engineering)  
**Mamafha**, Zwavhudi (Industrial Engineering)  
**Masemola**, Patricia Thokozani (Industrial Engineering)  
**Masilela**, Bridget (Electrical Engineering)  
**Mautsana**, Phuti Kenny (Industrial Engineering)  
**Mazibuko**, Happy Wendy (Chemical Engineering)  
**Mitleni**, Nhlanhla (Mechanical Engineering)  
**Mlotshwa**, Mmathapelo Beatrice (Electrical Engineering)  
**Mokgothu**, Nandi Felicia (Chemical Engineering)  
**Mooketsi**, Realeboga Lucky (Industrial Engineering)  
**Morgan**, Kieron (Mechanical Engineering)  
**Motau**, Puseletso Cynthia (Chemical Engineering)

**Mothomogolo**, Bright (Electrical Engineering)  
**Mphogo**, Peter Ernest (Electrical Engineering)  
**Mputamputa**, Olwethu (Industrial Engineering)  
**Nemaguvhuni**, Phindulo (Industrial Engineering)  
**Nhambe**, Noel (Industrial Engineering)  
**Nkosi**, Ntombenhle Sympathy (Chemical Engineering)  
**Nkwana**, Keletjo Moletelo (Industrial Engineering)  
**Nxane**, Thabiso Peter (Chemical Engineering)  
**Phogole**, Naledi Dimpho (Electrical Engineering)  
**Rajah**, Caleb Matthew (Industrial Engineering)  
**Ralarala**, Omphemetse Ursula (Industrial Engineering)  
**Sithole**, Takudzwa Dexter (Industrial Engineering)  
**Theko**, Brilliant Thakgalo (Industrial Engineering)  
**Tshikororo**, Zwivhuya Esther (Electrical Engineering)

#### 4. **Baccalaureus Ingeneriae | Bachelor of Engineering**

**Bainbridge**, Cuan (Electrical and Electronic Engineering)  
**Baloyi**, Fundzhi Mafundzha (Mechanical)  
**Gumede**, Nicol Pleasure (Electrical and Electronic with Information Technology)  
**Hlungwani**, Sthembiso Angel (Electrical and Electronic)  
**Mabunda**, Jade (Electrical and Electronic Engineering)  
**Makhuvele**, Ellon (Electrical and Electronic)  
**Manganyi**, Johannes Themby (Mechanical)  
**Mokgotho**, Nthabiseng Viona (Electrical and Electronic)  
**Mothopene**, Thabang (Electrical and Electronic Engineering)  
**Mphaga**, Makhado Johannes (Electrical and Electronic)  
**Ngcobo**, Luthando Ntandoyenkosi (Mechanical)

**Nkhumeleni**, Ndila Tj (Electrical and Electronic)  
**Rutavi**, Tatenda Alford (Mechanical)  
**Waja**, Yousha (Electrical and Electronic with Information Technology)

## 5. Bachelor Honours

**Moyo**, Colin Hloniphani (Urban and Regional Planning)

## 6. Bachelor of Science Honours

**Negogogo**, Tendani Muofhe (Quantity Surveying)  
**Tsoerenyane**, Aobokoe Tsoere (Quantity Surveying)

## 7. Bachelor of Engineering Technology Honours)

**Kadima**, Buzangu Jean Robert (Industrial Engineering)  
**Komane**, Pheladi Raheb (Industrial Engineering)  
**Madzonga**, Geoffrey Madzonga (Industrial Engineering)  
**Makuya**, Adziambei (Electrical Engineering)  
**Monnanyana**, Ofentse Cornelius (Industrial Engineering)  
**Nemakonde**, Ndivho (Industrial Engineering)  
**Netshiovhani**, Rolivhuwa Selby (Electrical Engineering)  
**Sixhuta**, Inga (Chemical Engineering)

## 8. Master of Technology

**Dlamini, Bhokinkosi Jabulani** (Construction Management)

**Title:** Assessment of work-life balance of construction professionals in

the Eswatini construction industry

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor/s:** Prof WD Thwala

**Gama, Mdumo Irvin** (Engineering: Electrical)

**Title:** Design of an intelligent cyber-physical system for an industrial application

**Supervisor:** Prof BS Babu

**Co-supervisor/s:** Prof W Doorsamy

**Makhani, Takalani** (Engineering: Chemical)

**Title:** Performance evaluation of tannin iron complex/polyethersulfone membrane for BTEX containing wastewater treatment

**Supervisor:** Prof K Moothi

**Co-supervisor/s:** Prof MO Daramola

**Makhubele, Josias Webster** (Engineering: Electrical)

**Title:** Comparative analysis of modulation techniques of an alternating current drive with respect to harmonic content and efficiency

**Supervisor:** Dr KA Ogudo

**Mampa, Kgaogelo Francina** (Engineering: Electrical)

**Title:** Characteristics and impact of COVID-19 lockdowns on commercial loads in South Africa

**Supervisor:** Dr AA Alonge

**Naidoo, Vizelle** (Engineering: Chemical)

**Title:** Biotransformation of Ganoderic Acid A using *Epicoccum nigrum*, *Penicillium novae-zelandiae* and *Penicillium Brevicompactum*

**Supervisor:** Dr L Mekuto

**Co-supervisor/s:** Dr V Mavumengwana

**Ntombela, Bogolo** (Construction Management)

**Title:** The viability of solar energy use to improve efficiency on the railway infrastructure: The case study

**Supervisor:** Prof I Musonda

**Olowolafe, Ayomide Victor Adetoye** (Engineering: Chemical)

**Title:** Algae as feedstock in microbial fuel cells

**Supervisor:** Dr L Mekuto

**Sithole, Zanele Blessed** (Engineering: Chemical)

**Title:** Integrated dynamic prediction modelling for biomass to

energy production

**Supervisor:** Prof M Belaid

**Co-supervisor/s:** Dr AN Matheri

## 9. Masters'

**Fanisi, Yamkela** (Sustainable Urban Planning and Development)

**Title:** Evaluating the effect of land use management processes on property development in the City of Johannesburg

**Supervisor:** Mr OR Pretorius

**Co-supervisor:** Dr GO Onatu

**Gxashe, Ludwe Sizinzo** (Urban and Regional Planning)

**Title:** Affordable housing finance systems for middle-income group in South Africa

**Supervisor:** Mr A Ogra

**Khutlapye, Segakweng** (Sustainable Urban Planning and Development)

**Title:** Urban resilience and sustainability through regenerative urban agriculture

**Supervisor:** Dr KJP Sebola-Samanyanga

**Lehloenya, Makae Moses** (Micro- and Nanoelectronic Engineering)

**Title:** Light weight machine-to-machine network management

**Supervisor:** Prof G Singh

**Co-supervisor:** Dr P Thakur

**Magagane, Shego Marcus** (Sustainable Urban Planning and Development)

**Title:** the relationship between traditional leaders municipal spatial planning and land use management. the case of Polokwane municipality, Limpopo

**Supervisor:** Dr GO Onatu

**Co-supervisor:** Dr E Makoni

**Mahlatsi, Malaika Lesego Samora** (Urban and Regional Planning) **(WITH DISTINCTION)**

**Title:** Gentrification and the displacement of vulnerable communities in the post-apartheid city: A case study of the Maboneng Precinct and Braamfontein, Johannesburg

**Supervisor:** Prof T Gumbo

**Maphathe, Bokang Francis** (Micro- and Nanoelectronic Engineering)

**Title:** Design of terahertz channel modeling in internet of multimedia nano things

**Supervisor:** Prof G Singh

**Mathane, Tlou Phillemon** (Sustainable Urban Planning and Development) **(WITH DISTINCTION)**

**Title:** Social justice and smart cities technology interventions:

a case study in the city of Tshwane, South Africa

**Supervisor:** Prof T Gumbo



**Mollo, Thato Alice** (Sustainable Urban Planning and Development)

**Title:** Industrial parks development: A case of Maluti-A-Phofung Special Economic Zone (SEZ), Free State, South Africa

**Supervisor:** Mr A Ogra

**Moosa, Basiiraa** (Sustainable Urban Planning and Development)

**Title:** A policy framework towards fostering urban resilience: the case of KwaZulu-Natal, South Africa

**Supervisor:** Mr OR Pretorius

**Co-supervisor:** Dr J Sebola

**Mthambeka, Nam Herold** (Urban and Regional Planning)  
**(WITH DISTINCTION)**

**Title:** Urban Heat Islands (UHI) assessment of coastal metropolitan cities of South Africa

**Supervisor:** Mr A Ogra

**Munsamy, Dashan** (Sustainable Urban Planning and Development)

**Title:** An Integrated Waste Management System using Emerging

Technologies of Industry 4.0 in the City of Johannesburg, South Africa

**Supervisor:** Mr A Ogra

**Co-supervisor:** Prof T Gumbo

**Naidoo**, Devashnee (Urban and Regional Planning)

**Title:** Assessment of spatial transformation and nodal planning in the city of Pietermaritzburg: Review of transit-oriented development

**Supervisor:** Mr A Ogra

**Co-supervisor:** Mr Z Mbinza

**Ndukwe**, Emmanuel Chima (Sustainable Urban Planning and Development)

**Title:** Assessing Urban Water Sustainability Management Approaches.

A Case Study of City of Johannesburg

**Supervisor:** Prof T Gumbo

**Co-supervisor:** Mr A Ogra

**Phosho**, Mueletshedzi Helen (Sustainable Urban Planning and Development) **(WITH DISTINCTION)**

**Title:** Exploring the spatial and socio-economic transformation nexus in post-apartheid South Africa: lessons from Fleurhof and Cosmo city

**Supervisor:** Prof T Gumbo

**Stewart**, Andrew John (Sustainable Urban Planning and Development)

**Title:** Assessing the effectiveness of the urban development zone tax incentive in achieving inner city renewal: a Johannesburg and Cape Town comparison

**Supervisor:** Mr A Ogra

**Co-supervisor:** Prof T Gumbo

**Tshifularo**, Khwathelani Violet (Sustainable Urban Planning and Development)

**Title:** Evaluating the impacts of waste at the Weltevreden landfill site in

Polokwane, Limpopo province, South Africa

**Supervisor:** Prof W Musakwa

## 10. Master of Science

**Essop**, Raeesah (Construction Management)

**Title:** An assessment of virtual reality to enhance performance in the

South African construction industry

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor:** Prof WD Thwala & Dr JO Aliu

**Mashele**, Makungu Praises (Construction Management)

**Title:** An appraisal of public-private partnership procurement systems

in the South African construction industry

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor:** Prof WD Thwala & Dr OO Oguntona

**Phaladi**, Mokgaetji Gift (Quantity Surveying)

**Title:** An evaluation of the implementation of artificial intelligence on

South African construction projects to enhance productivity

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor:** Dr N Mashawama & Prof WD Thwala

**Yates, Gareth** (Quantity Surveying)

**Title:** Using an artificial neural network to determine the Sales price of properties in Johannesburg, South Africa

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor:** Prof WD Thwala

## 11. Master of Philosophy

**Kibulungu, Jonathan Wilondja** (Mechanical Engineering)

**Title:** An industry 4.0 approach to develop an automatic control system for the optimization of small-scale steam plant using PLC and SCADA

**Supervisor:** Dr OT Laseinde

**Lee, Christopher Jon** (Mechanical Engineering)

**Title:** Fast operational context switching for very large scale high performance computing system

**Supervisor:** Prof SH Connell

**Co-supervisor:** Dr D Sabatta

**Mathode, Rashaka** (Mechanical Engineering)

**Title:** Investigation into the contamination of ejection nozzles in a

sorting machine treating wet kimberlite and alluvial material

**Supervisor:** Prof MM Mashinini

**Mbali**, Lukanyo (Electric and Electronic Engineering)

**Title:** Design of an off-grid hybrid energy system for electrification of a remote region: a case study of upper blink water community, South Africa

**Supervisor:** Dr O Dzobo

**Molamodi**, Thabo Alpheus (Mechanical Engineering)

**Title:** Failure and monitoring techniques for life prediction of fiber reinforced composites

**Supervisor:** Prof M Mashinini

**Moreothata**, Grace Tsholofelo (Electric and Electronic Engineering)

**Title:** Impact of wind plants on voltage sags

**Supervisor:** Dr NE Mbuli

**Co-supervisor:** Prof JHC Pretorius

**Mthembu**, Nokwanda Pearl Nombali (Mechanical Engineering)

**Title:** Numerical analysis of evacuated tube solar collector with a heat pipe containing an I-section geometry insert

**Supervisor:** Prof LK Tartibu

**Co-supervisor:** Dr JGM Mukuna

**Nogaya, Gugulethu** (Electric and Electronic Engineering)

**Title:** Repurposing South Africa's retiring coal-fired power stations for

renewable energy generation: A techno-economic analysis

**Supervisor:** Prof NI Nwulu

**Co-supervisor:** Dr SL Gbadamosi

**Nxumalo, Xitsundzuxo Humphrey** (Mechanical Engineering)

**Title:** Investigation of the mechanical properties of rotary friction

welded stainless steel rods

**Supervisor:** Prof PM Mashinini

**Co-supervisor:** Mr MD Mukhawana

**Podile, Mpho** (Mechanical Engineering)

**Title:** Mitigating of rail-wheel vibration via reduction of maximum

amplitude peaks

**Supervisor:** Dr DVV Kallon

**Co-supervisor:** Dr B Balekwa

**Ramulifho, Rabelani Duncan** (Mechanical Engineering)

**(WITH DISTINCTION)**

**Title:** Efficiency evaluation of a high temperature preheating system

for additive manufacturing

**Supervisor:** Prof K Gupta

**Co-supervisor:** Dr D Glaser

**Ruvengo, Tafarah** (Mechanical Engineering)

**Title:** Investigating the mechanical behaviour of titanium powder reinforced polymer matrix composite

**Supervisor:** Prof PM Mashinini

**Co-supervisor:** Prof DM Madyira

**Zulu, Celimpilo Lindani** (Electric and Electronic Engineering)

**Title:** Electricity theft monitoring and detection system with double

connected data capture system

**Supervisor:** Dr O Dzobo

## 12. Master of Engineering

**Holloway, Jessica Johanna** (Mechanical Engineering)

**Title:** Numerical modelling of crack behaviour of buried pipes

incorporating soil loads

**Supervisor:** Prof DM Madyira

**Co-supervisor:** Dr O Asumani

**Maluleke, Bonolo Ignitius** (Electrical and Electronic)

**Title:** Security evaluation of speech and gesture recognition TinyML

models against evasion attacks

**Supervisor:** Prof TG Swart

**Co-supervisor:** Dr R Heymann

**Masamvu, Wayne Mathew** (Electrical and Electronic)  
**Title:** Reactive power control in power system networks with renewable energy sources considering uncertainty  
**Supervisor:** Dr O Dzobo

**Olorunfemi, Benjamin Oluwamuyiwa** (Electrical and Electronic)  
**Title:** An internet of things enabled solar panel monitoring and cleaning system  
**Supervisor:** Prof NI Nwulu  
**Co-supervisor:** Prof OA Ogbolumani

**Ramokoka, Tshiamo** (Mechanical Engineering)  
**Title:** Modelling fluid and particulate flow through a ventriculoperitoneal shunt under variable temperature conditions  
**Supervisor:** Dr M Bhamjee

**Uwaezuoke, Emmanuel Chukwunazor** (Electrical and Electronic)  
**Title:** Analysis of power line communication network vulnerabilities using cyber security techniques  
**Supervisor:** Prof TG Swart



### 13. Doctor Philosophiae

**Akwada**, Damenortey Richard (Mechanical Engineering)

**Title:** Characterisation of bamboo as a candidate composite material for structural applications: A case study in GHANA

**Supervisor:** Prof ET Akinlabi

### 14. Doctor of Philosophy

**Afetorgbor**, Emmanuel Kofi (Civil Engineering)

**Title:** Corporate social responsibility framework for the Ghanaian construction

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor/s:** Prof WD Thwala & Dr BM Arthur-Aidoo

**Akinola**, Segun Ayokunle (Electrical and Electronic Engineering)

**Title:** Analysis and design of Ku-band planar microstrip antenna for satellite applications

**Supervisor:** Prof G Singh

**Babi**, Bombay (Electrical and Electronic Engineering)

**Title:** Development of a protection method for turbine-generator shafts against fatigue damage induced during islanding

**Supervisor:** Prof PN Bokoro

**Ikome, John Mosoke** (Mechanical Engineering)

**Title:** An analysis and development of a competitive model for

competitiveness improvement in the South African Automotive Industry

**Supervisor:** Dr OT Laseinde

**Co-supervisor/s:** Dr MG Kanakana-Katumba

**Modekwe, Helen Uchenna** (Chemical Engineering)

**Title:** Production of carbon nanotubes via catalytic pyrolysis of waste polypropylene plastics usable in membranes for acid mine treatment

**Supervisor:** Prof K Moothi

**Co-supervisor/s:** Prof MO Daramola & Prof MA Mamo

**Ogbolumani, Omolola Adejoke** (Electrical and Electronic Engineering)

**Title:** A hybrid decision-making framework for optimal resource allocation in the food-energy-water nexus

**Supervisor:** Prof N Nwulu

**Oluah, Chukwumaobi Kingsley** (Mechanical Engineering)

**Title:** Development of advanced green materials for Trombe wall applications

**Supervisor:** Prof ET Akinlabi

**Co-supervisor/s:** Prof HO Njoku & Prof TC Jen

**Omoniyi, Peter Olorunleke (Mechanical Engineering)**

**Title:** Joint integrity evaluation and optimization of additive manufactured and laser welded Ti6Al4V

**Supervisor:** Prof ET Akinlabi

**Co-supervisor/s:** Dr MR Mahamood

**Phokane, Thobadingoe Craven (Mechanical Engineering)**

**Title:** *Simultaneous optimization of quality and productivity in gear*

*manufacturing by multi criteria decision-making hybrid techniques*

**Supervisor:** Prof K Gupta

**Co-supervisor/s:** Dr CE Anghel

## **15. Honorary Doctor of Engineering**

**Lataief, Khalid Ben**

**Akwada, Damenortey Richard (DPhil) Mechanical Engineering)**

Damenortey Richard Akwada was born in Accra, Ghana. He graduated from the University of Cape Coast in Ghana with a BSc in Engineering Physics in 2011 and from Coventry University in the United Kingdom with an MSc in Engineering and Management in 2014. In May 2015, he enrolled and started his doctoral programme at the University of Johannesburg. He is currently a lecturer and the head of the Mechanical Engineering Department at the Cape Coast Technical University in Ghana.

The candidate conducted research titled 'Characterization of bamboo as a candidate composite material for structural applications: A case study in Ghana'. His research focused on a multifaceted application of eco-friendly bamboo fibres chemically extracted, treated, and processed into yarn. The yarn was handwoven with different orientations. It was also used to fabricate laminate composite and characterised for chemical, mechanical, and thermal properties. The study showed that the  $\pm 45^\circ$  orientated yarn significantly improves thermal stability, flexural, tensile and impact absorption energy of the composite plate. The novelty of this work is the matrix modification, which improved the stability of the yarn used to fabricate the composite plate.

**Supervisor:** Prof Esther T. Akinlabi

**Afetorgbor, Emmanuel Kofi (PhD) Civil Engineering**

Emmanuel Kofi Afetorgbor obtained his Postgraduate Diploma in Computing and Informatics and an MSc in Engineering Management, both from the Nottingham Trent University in the United Kingdom. He also has a Prince2 Project Management Certification and is a Fellow of the American Academy of Project Management (FAAPM) and currently in good standing. He has published journal papers in accredited journals.

In his study, he explored and developed a corporate social responsibility framework, which is aimed at easing the implementation of CSR programs within the construction industry in Ghana. The candidate adopted a qualitative technique with the use of an extensive review of literature supported by structured interview surveys and analysed using context analysis. The developed CSR framework has independent variables, which are integrated and will encourage the implementation of CSR activities and also produce realistic benefits, thus acting as a roadmap for each implementation in the context of the Ghanaian construction industry. The construction industry in Ghana needs a corporate social responsibility framework to coordinate its activities to help enhance the sector's contribution to economic growth.

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

## **Akinola, Segun Ayokunle (PhD)** Electrical and Electronic Engineering

Segun Ayokunle Akinola holds an Honours degree in Electrical and Electronics Engineering (2010) from the University of Ado-Ekiti (now Ekiti State University). He worked with Samsung Electronics franchise and rose to the rank of deputy technical lead, engineering and services in Nigeria. In 2016, he was inducted as a corporate member of the Nigeria Society of Engineers and Council for the Regulation of Engineering in Nigeria (COREN). He obtained a Master's degree in Information Technology from the National Open University of Nigeria in 2017. After the completion of his master's degree, he established Asam Integrated Resources Limited, which is an indigenous engineering company in Nigeria. Upon his pursuit of and passion for a better engineering system in Nigeria, he contested and was elected as the assistant secretary general of the Nigeria Society of Engineers, Ekiti state chapter, breaking the barrier as the first youngest engineer to hold such a reputable position.

The candidate's doctoral thesis presents the analysis and design of Ku-band planar microstrip antenna for satellite applications. He designed a microstrip antenna using a circular ring with a tilted rectangular resonator. Further, the frequency selective surface is used as a superstrate to enhance the gain and directivity of the proposed antenna. In addition, the feed networks, such as series feed, corporate feed, with corporate-series feed network, are explored for array antenna to design a beam-forming/beam-steering characteristic using a commercial

simulator in Ku-band for satellite communication. The candidate's doctoral thesis produced several publications.

**Supervisor:** Prof G Singh

## **Babi, Bombay (PhD) Electrical and Electronic Engineering**

Bombay Babi obtained his BTech and MTech degrees in Electrical Engineering from the University of South Africa in 2009 and 2016, respectively. He subsequently enrolled for the PhD in Electrical and Electronic Engineering at the University of Johannesburg in 2018. His research interests entail protection of distributed generation steam turbine-generators, electricity markets, etc. To date, Bombay Babi has published three research papers in international journals and conference proceedings.

This thesis addresses the fundamental question of shaft fatigue damage, such as applicable to steam turbine-generators, in the context of transient torques specifically induced during islanding. The related studies described in the literature mostly focus on the modelling of shaft fatigue damage, which could not favour the conception of shaft protection of turbine-generators during islanding. Therefore, the development of a two-step shaft protection method, which ensures safe islanding option to local loads, consists of a novel approach to mitigate torsional vibrations in turbine-generators operating in distributed generation. In addition, this method is capable of subverting the probability of unplanned downtime and revenue losses. The two-step protection technique consists of the following essential stages: modelling of induced transient torque and risk prediction of shaft fatigue damage. The contribution of this thesis is centred on torque transient pattern recognition as well as on risk prediction of shaft fatigue damage. Results show that the developed protection method yields 0.011% probability of



shaft fatigue damage under the most adverse islanding condition used. The various aspects of this study have been published in renowned international and indexed journals as well as in conference proceedings.

**Supervisor:** Prof PN Bokoro

## **Ikome, John Mosoke (DPhil) Mechanical Engineering**

John Mosoke Ikome obtained his National Diploma (ND) and Bachelor's of Technology (BTech) in Industrial Engineering from the Vaal University of Technology, South Africa, in 2010 and 2011, respectively. He received a Master of Technology (MTech) in Industrial Engineering with a specialisation in Technology Management from the Tshwane University of Technology, Pretoria, South Africa, in 2014. He later embarked on his PhD in Mechanical Engineering in 2019 at the University of Johannesburg. He is a registered member of SAIIIE and currently a Lecturer and Discipline Coordinator for the Department of Industrial Engineering, Operation Management and Mechanical Engineering (IEOMME) at the Vaal University of Technology, South Africa. He received a membership invitation for his academic and research excellence as an Editorial Board Member for the *American Journal of Mechanical and Industrial Engineering (AJMIE)* in 2018. He is a reviewer for both local and international research publishers. He published seven research articles from his doctoral studies, i.e. three book chapters, three conference proceedings, and one peer-reviewed Scopus/ISI indexed journal article.

The candidate's doctoral thesis focuses on analysing and developing a competitive model to improve global competitiveness in the South African automotive industry. This was achieved by applying Industrial and Mechanical Engineering productivity techniques, reliability models, theory of constraint and global competitive models. One of his research findings shows that the automotive industry in the

medium to long term is dependent on government regulations and policies for survival. The accomplished objectives of his research are useful to raise South Africa's automotive industry's global competitiveness.

**Supervisor:** Prof Opeyeolu Timothy Laseinde (UJ)

**Co-supervisor:** Dr Mukondeleli Grace Kanakana Katumba (TUT)

## **Modekwe, Helen Uchenna (PhD) Chemical Engineering**

Helen Uchenna Modekwe obtained her BTech (2nd Class Honours Upper Division) in Chemical Technology from Nnamdi Azikiwe University, in 2004, and completed her Master's degree in Process Engineering at the University of Lagos, in 2011, both in Nigeria. She commenced her doctoral studies in 2018, funded by the University of Johannesburg under the Global Excellence Stature (GES) 4.0 Postgraduate Scholarship, Fourth Industrial Revolution. Her doctoral study makes a valuable contribution to the knowledge in solving one of the global problems, water pollution, by using waste plastics to produce useful carbon nanotubes, which were infused into polymeric membranes for the treatment of acid mine drainage. A total of seven peer reviewed publications, three ISI journal articles, two conference proceedings, and two book chapters were produced.

In her doctoral research, she focused on the production of carbon nanotubes via catalytic pyrolysis of waste polypropylene plastics usable in membranes for acid mine treatment. High performance catalytic material was developed, which effectively catalysed the production of very high quality and optimal yield carbon nanotubes from waste plastics. This study addresses a number of important topics all at once: the production of carbon nanotubes because of the quality and consistency required in specific purity sensitive application areas; acid mine treatment is of particular interest in the South African context given the significant mining activities and their related wastewater generation and impact on available already scarce water resources; and economics of re-utilisation of waste

plastics, which addresses environmental challenges as well as aligns with the United Nations (UN) Sustainable Development Goals (SDGs). This research offers new insights for an innovative and affordable resource for industrial production of carbon nanotubes.

**Supervisor:** Prof K Moothi  
**Co-supervisor:** Prof MO Daramola  
**Co-supervisor:** Prof MA Mamo

**Ogbolumani, Omolola Adejoke (PhD)** Electrical and Electronic Engineering

Omolola Adejoke Ogbolumani studied in Nigeria and graduated from the Lagos State University, Ojo, in 2003, with a BSc in Electronics and Computer Engineering. She obtained an MSc in Electrical and Electronics Engineering from the University of Lagos in 2006. Her practical career in engineering began in the industry before transitioning to academia in 2014. In 2019, she started her PhD studies on 'A Hybrid Decision-Making Framework for Optimal Resource Allocation in the Food-Energy-Water Nexus' at the University of Johannesburg. Additionally, she co-supervised two master's degrees in Electrical and Electronics Engineering during her study period at the University.

The candidate developed a holistic approach for the sustainable management of three interconnected fundamental natural resources, commonly referred to as the Food-Energy-Water-Nexus (FEW-N). The study's objective was to examine how quantitative decision-making tools could be used to optimise the intersectoral usage of the resources within the nexus system to sustain resource security. An optimal resource allocation framework, based on four mathematical models with diverse objectives, constraints, and case studies, was developed for the food-energy-water nexus system. Summarily, the research developed novel approaches using FEW-N thinking to enhance understanding of the interlinkages between food, energy, and water resources, in achieving resource sustainability, reliability, and security. As the study is of global significance, it is

recommended that policymakers use the approach outlined in the study to develop sustainability-oriented policies that reduce the costs and environmental impacts resulting from the development of food, energy, and water systems. The candidate published findings from her research in four high-impact, peer-reviewed journals.

**Supervisor:** Prof Nnamdi Nwulu

## **Oluah, Chukwumaobi Kingsley (PhD) Mechanical Engineering**

Chukwumaobi Kingsley Oluah obtained his Bachelor of Engineering degree in Mechanical Engineering (2012) from the University of Nigeria. He further obtained a Master's degree in Mechanical Engineering (2018) specialising in Energy and Power Technology from the University of Nigeria. He was also an exchange student with the department of Mechanical Engineering Science, University of Johannesburg, where he conducted simulation studies for his master's dissertation. From his PhD research, Oluah published four peer-reviewed conferences and four journal articles all indexed in SCOPUS/ISI databases.

The candidate conducted research titled 'Development of advanced green materials for Trombe wall applications'. This work involves the use of waste and nanomaterials to develop a latent heat-based storage wall for Trombe wall applications. A multi-criteria study was conducted to identify the most suitable phase change material (PCM). A CFD study was conducted to determine the optimum concentration of nanoparticles that yields the best latent heat storage capacity. Numerical and experimental study were conducted to validate the suitability of the material developed. This work prides its novelty in being able to deploy a hybrid multi-criteria approach in the development of sustainable Trombe wall system.

**Supervisor:** Prof Esther T. Akinlabi

**Co-supervisor/s:** Prof Howard O. Njoku & Prof T.C. Jen



## **Omoniyi, Peter Olorunleke (PhD) Mechanical Engineering**

Peter Omoniyi obtained his Bachelor's degree in Mechanical Engineering in 2014 from the University of Ilorin, Nigeria. He then obtained his Master's degree in Mechanical Engineering from the same University in 2018. He started his doctoral studies at the University of Johannesburg in 2020. His career as an academic staff member in the Department of Mechanical Engineering, University of Ilorin, started as a graduate assistant in 2016 and rose to the rank of lecturer 1 in 2021. His research interests include additive manufacturing, fusion welding, and composite engineering.

The candidate examined the joint integrity of additively manufactured and laser welded titanium alloy – Ti6Al4V. The candidate conducted a comparative study of characterised and optimised additively manufactured and laser welded composites. He also established the possibility of joining laser metal deposited parts using laser welding. The research solved the challenge of limited build space encountered when using powder bed additive manufacturing technology. This study is novel and beneficial to the aerospace and biomedical industries. The research produced ten articles published in reputable Scopus indexed journals and international conferences.

**Supervisor:** Prof Esther Titilayo Akinlabi

**Co-supervisors:** Dr Rasheedat Modupe Mahamood  
Prof Tien-Chien Jen

## **Phokane, Thobadingoe Craven (PhD) Mechanical Engineering**

Thobadingoe Craven Phokane completed BEng and MEng in Mechanical Engineering degrees at the University of Johannesburg. His specialisation is in advanced manufacturing. He has over five years of professional experience. He has expertise in gear manufacturing, process optimisation, modern machining, and materials engineering. He has authored quality articles, which have been published in high impact journals and proceedings of international conferences. He has also authored book chapters. He presented his work at international platforms and trained engineering students for process optimisation.

This doctoral research is based on optimisation of advanced gear manufacturing processes for enhancement of gear quality and process productivity. The research outcomes are of great assistance to gear manufacturing industries by providing solution in terms of an optimised set of process parameters for simultaneous improvement of quality and productivity. Two important modern machining processes, namely, wire electric discharge machining and laser beam cutting, have been focused for manufacturing of miniature gears of brass and stainless steel. In this research, intelligent optimisation techniques, namely, Fuzzy-MOORA, Fuzzy-TOPSIS, Grey Relational Analysis, DEAR, and Super Ranking techniques, have been successfully implemented with outcomes in terms of enhancement in gear manufacturing quality and productivity of the processes. This research has provided an optimised set of parameters for ready industrial reference and opened new avenues for future

research to be conducted on various other gear types and manufacturing techniques.

**Supervisor:** Prof Kapil Gupta

**Co-supervisor:** Dr Cristina Elena Anghel

## **Honorary Doctor of Engineering**

### **Lataief, Khalid Ben**

Professor Khaled Ben Letaief received his BSc (with distinction), MS and PhD degrees in Electrical Engineering from Purdue University, USA. During his career, he has held many leadership and management positions. These include serving as Provost of HBKU, a newly established research-intensive university in Qatar, from 2015 to 2018. He also served as HKUST Dean of Engineering from 2009 to 2015, as well as in many other positions, such as Head of HKUST Electronic and Computer Engineering Department, and Director of the Hong Kong Telecom Institute for Information Technology.

Since 1993, he has been with HKUST where he has held many administrative positions, including Head of the Electronic and Computer Engineering Department, and founding Director of Huawei Innovation Laboratory. He also served as Dean of Engineering. Under his leadership, HKUST Engineering has reached new heights and was ranked #14 worldwide at the end of his term in 2015, according to QS World University Rankings.

Prof Letaief is a world-renowned leader in wireless communications and networks with research interest in big data analytics systems, mobile cloud and edge computing, tactile Internet, 5G systems and beyond. In these areas, he has written over 630 journal and conference papers and has given invited keynote addresses as well as courses all over the world. He has

made six major contributions to IEEE Standards along with 15 patents.

Professor Lataief is the founding Editor-in-Chief of *IEEE Transactions on Wireless Communications* and was instrumental in organising many IEEE flagship conferences. He is well recognised for his dedicated service to professional societies, and in particular IEEE, the world's leading organisation for communications professionals with headquarter in New York City and members in 162 countries, where he has served in many leadership positions. These include IEEE Communications Society President (2018-19), IEEE Communications Society Vice-President for Technical Activities, and IEEE Communications Society Vice-President for Conferences.

He is recognised by Thomson Reuters as an ISI Highly Cited Researcher with over 38 500 citations and h-index of 87 and was listed among the 2020 top 30 of AI 2000 Internet of Things Most Influential Scholars.

Professor Letaief is also the recipient of many distinguished awards and honours, including the 2019 Distinguished Research Excellence Award by HKUST School of Engineering (highest research award and only one recipient every three years is honoured for his/her contributions); 2019 IEEE Communications Society and Information Theory Society Joint Paper Award; 2018 IEEE Signal Processing Society Young Author Best Paper Award; 2016 IEEE Marconi Prize Paper Award in Wireless Communications; and 2010 Purdue University Outstanding Electrical and Computer Engineer Award.



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## 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.