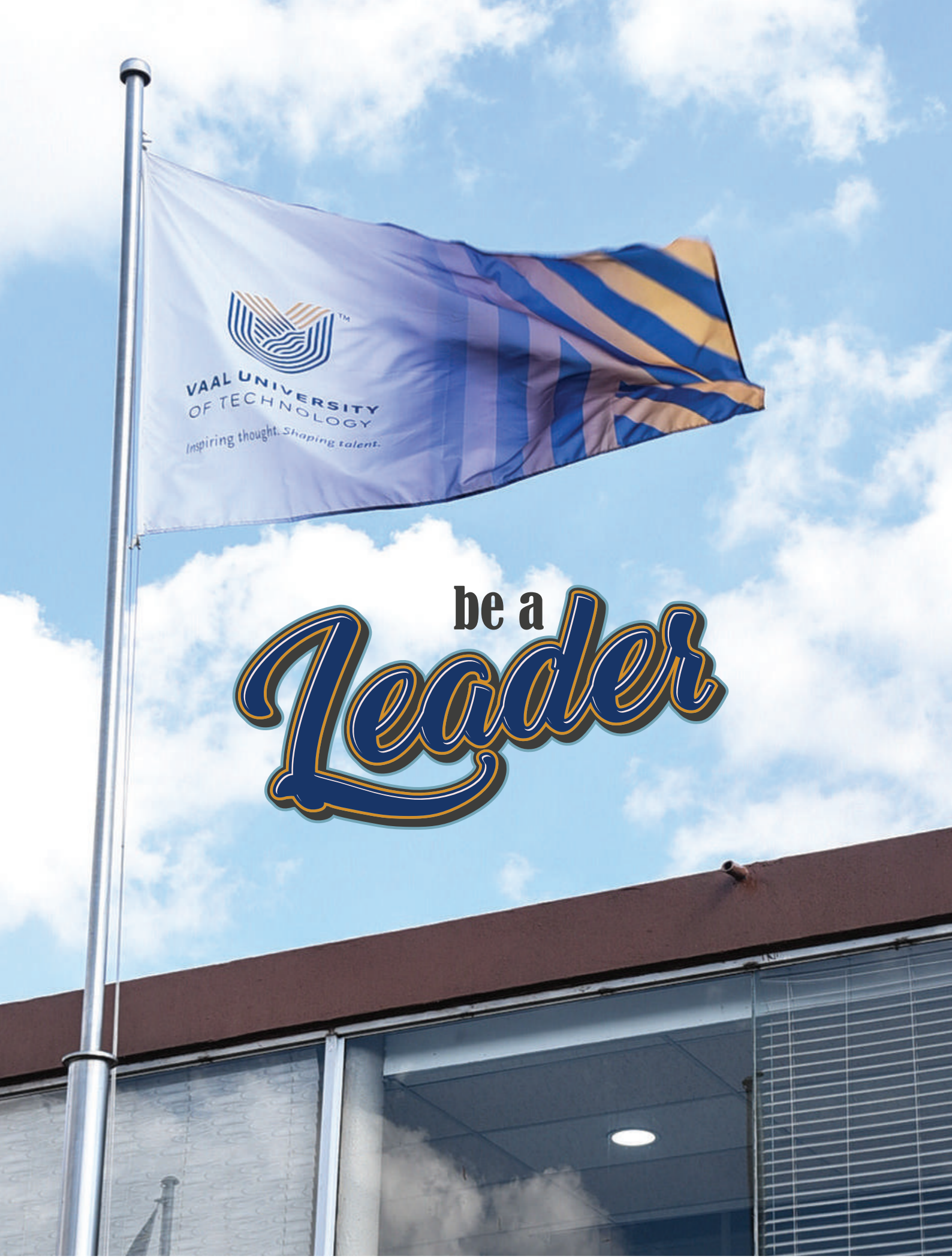

VAAL UNIVERSITY
OF TECHNOLOGY
Inspiring thought. Shaping talent.
be a
Leader

VAAL UNIVERSITY
OF TECHNOLOGY

TO THE CLASS OF 2023

Distinguished Members of the University Council, Management, Faculty, Support staff, Honoured Guests, and Graduates. (All protocols observed)

On behalf of the Vaal University of Technology (VUT), it is with immense pride and joy that we have gathered here today to celebrate the noteworthy achievements of our Master's and PhD graduates.
Today holds special meaning which has culminated from the consistent hard work, dedication, sacrifices and fortitude not just for those adorned in academic regalia, but for the entire VUT community.
A proud and defining moment indeed. Well done!!!

As we reflect on the remarkable accomplishments of our graduates, it's important to acknowledge their achievements in a Global context, where the pursuit for post graduate degrees in higher education is on the rise. As you venture out into the world as a distinguished group of graduates, remember your triumphs and tribulations which you endured and make your mark within this prestigious academic community and beyond.

The role of Master's and PhD graduates worldwide highlights this commitment. As a Nation several graduates contribute to the intellectual wealth of our country, making a sustainable difference in the advancement of Science, Engineering, Commerce, Industrial Development and Technology Advancements. The skills you have acquired contribute not only to your fields but also to the collective knowledge and human capital development finding solutions to Global challenges of today.

I would be failing in my responsibility if I do not express my gratitude to the VUT Faculties, who have nurtured and guided you which contributed to your success, so thank you for contributing to the success of the graduates before us

In the words of the late great Nelson Mandela who said, *"Education is the most powerful weapon which you can use to change the world"; "Sometimes it falls upon a generation to be great. You can be that great generation. Let your greatness blossom."*

A graduation ceremony is not just an end but a new beginning, you leave us today equipped with new skills and knowledge, so go forth and excel in your fields, and make a meaningfully contribution to the Global society.

To families and friends, thank you for your unwavering support to our graduates. I know that the journey has not been an easy one, but your continued support has come to bear fruits that we are observing today. In the African culture, *"Umntu ngumntu ngabantu, Muthu ndi muthu nga vhathu, Munhu I munhu hi vanhu"* which means a person is a person through other people and encapsulates the interconnectedness and communal spirit that fuelled our success, as the late Reverend Desmond Tutu once said when explaining the philosophical concept of Ubuntu.

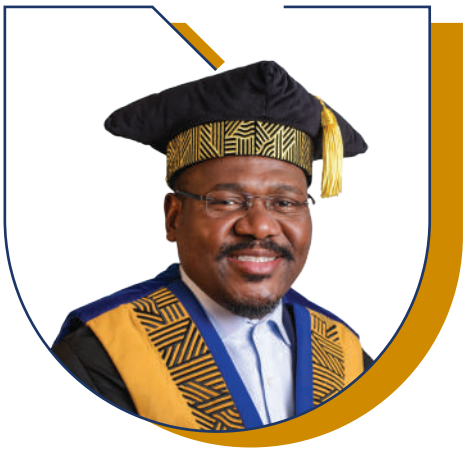
Sincerest congratulations on your achievements and continue to proudly carry the flag of your Alma Mater – VUT. Wishing you all every success in your future endeavours.

Thank you.

Dr. Simphiwe Nelana
Acting Vice-Chancellor and Principal

VAAL UNIVERSITY OF TECHNOLOGY

OFFICE BEARERS



Prof MJ Radebe
Chairperson of Council
PhD : Media Studies (WITS), MA and BA Hons : Journalism and Media Studies (WITS),
BSc : Computer Sciences (VISTA)

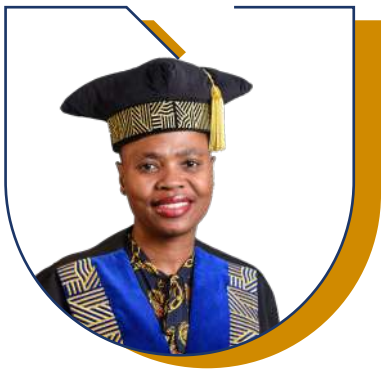
Dr SM Nelana
Vice-Chancellor and Principal (Acting)
PhD (UJ), MSc (UWC), BSc Hons (UWC), BSc (UWC)

DR GL Mofokeng
Registrar (Acting)
PhD: (VUT), M.D.HRM (RAU), B.Ed. Hons: (UNIN), BA. Ed: (UNIN), MA, Certificate(WITS)

VACANT
DVC: Resources & Planning

Prof MJ Linington
Deputy Vice-Chancellor Teaching Learning and Student Support Services
PhD (WITS), BSc (Agric) Hons. (US), BSc (Agric) (US)

VACANT
DVC: RICI
Research, Innovation, Commercialisation and Internationalisation



Ms NR Mgobo
Chief Financial Officer
CA (SA), BComHons (UNISA)

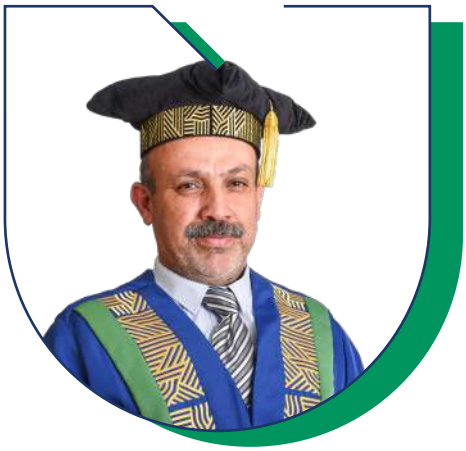
VAAL UNIVERSITY
OF TECHNOLOGY

EXECUTIVE DEANS

Prof CJ Grobler

Executive Dean:
Applied And Computer Sciences

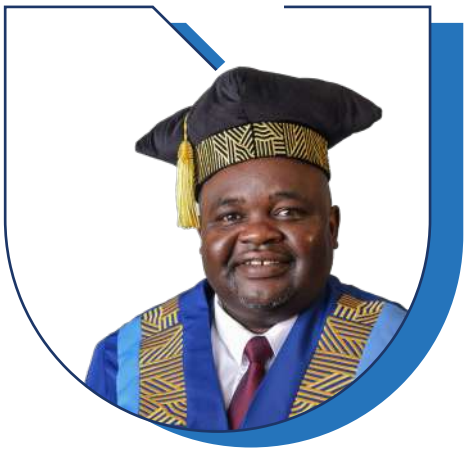
D Tech: Biomedical Technology (DUT), M Tech: Biomedical Technology (CUT),
NH Dip: Biomedical Technology (VUT), N Dip: Biomedical Technology (VUT)



Prof. Khaled Abou-El-Hossein

Executive Dean
Engineering And Technology

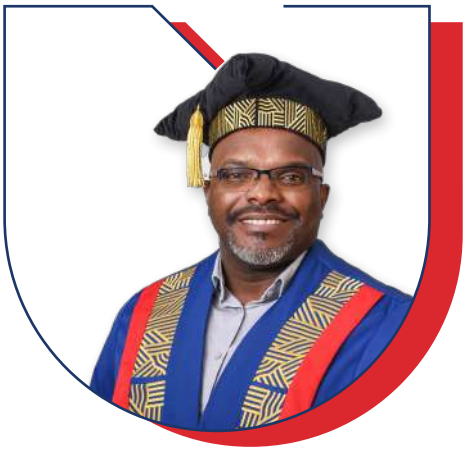
PhD: Eng (NTU, Ukraine), MSc: Eng (NTU, Ukraine),
Grad.Cert: Tert, Teaching (Curtin, Aus)



Prof LC Mafini

Executive Dean:
Management Sciences

PhD Economics (NWU), DTech: Business (VUT),
ADHE (UFS), MSC (CUT), BBA (MSU)



Prof Lazarus Maleho

Executive Dean: (Acting)
Human Sciences

DTech: Strat Comm (TUT), MTech: PRM (VUT),
BTech PRM (VUT), N.Dip: PRM (VUT)

VAAL UNIVERSITY OF TECHNOLOGY

HONORARY DOCTORATES

2002:
Archbishop Emeritus D Tutu - Humanities

2006:
Prof M Hinoul – Extraordinary Professorship
Dr Adv PDF Tlakula - Legal Studies
Dr M Oliphant - Sports Management

2008:
M Mangena - Applied Sciences
Adv IA Semenya - Law
DN Koloane - Fine Arts
SM Pityana - Humanities
Adv G Bizos - Law
Archbishop WHN Ndungane - Humanities

2011:
H Masekela - Human Sciences

2012:
Reverend BE Lekganyane - Human Sciences
M Mohapi (posthumously) - Human Sciences

2013:
Judge MM Mabesele - Human Sciences
G Immelman - Engineering

2016:
B E E Molewa - Applied Sciences
T Tebeila - Business Administration
I I Sooliman (Dr) - Humanities
J B Irkhede - Arts and Design Human Sciences
Mme C M Nku (posthumously) - Human Sciences

2018:
M Meyer - Management Sciences
T Makgoe - Human Sciences

2019:
Z V Sobukwe (posthumously) - Humanities

VUT STRATEGIC PLAN 2020-2024

VISION
An African university that leads in quality teaching and learning, informed by research and driven by innovation and technology.

MISSION
To produce employable and entrepreneurial graduates who can make an impact in society.

VALUES
Excellence, Creativity, Mutual Respect, Collegiality, Honesty and Integrity, Tolerance, and Diversity.

QUALITY TEACHING & LEARNING

GOAL 1

To deliver quality teaching and learning, enhanced by the effective use of ICT, which meets the needs of society through a PQM that supports a multi- and interdisciplinary approach.

SO 1: Increase student success (satisfaction)
SO 2: Enhance student academic development
SO 3: Increase technology enabled learning
SO 4: Improve staff development
SO 5: Improve enrolment management
SO 6: Build a curriculum of excellence
SO 7: Improve marketing and communication
SO 8: Improve VUT brand image

INCREASE RESEARCH PRODUCTIVITY

GOAL 2

Enhance research output, innovation, technology Transfer and commercialisation.

SO 9: Increase research outputs
SO 10: Increase commercialisation
SO 11: Increase strategic engagement
SO 12: Increase research capacity
SO 13: Increase research support
SO 14: Develop Science Park

IMPROVE FINANCIAL VIABILITY

GOAL 3

Achieve financial sustainability and controlled growththrough improved institutional effectiveness and sound financial discipline and control.

SO 15: Increase revenue from commercialisation
SO 16: Improve fee collection
SO 17: Reduce number of non-viable programmes
SO 18: Improve procurement and cash management

CREATE A PERFORMANCE CULTURE

GOAL 4

Create an enabling environment to enhance a performance culture supported by effective management of human resources.

SO 19: Improve performance culture
SO 20:Optimised staffing structure
SO 21: Improve infrastructure
SO 22: Institutionalise transformation

ENHANCE LEADERSHIP & GOVERNANCE

GOAL 5

Create an enabling environment for effective strategic and ethical leadership and good governance.

SO 23: Improve strategic leadership
SO 24: Improve internal controls, risk and compliance
SO 25: Improve governance framework

VAAL UNIVERSITY OF TECHNOLOGY

ORDER OF PROCEEDINGS

The Academic Procession enters the Desmond Tutu Great Hall

The Vice-Chancellor & Principal Constitutes the Congregation

NATIONAL ANTHEM

PRAYER AND WELCOME

PRESENTATION OF GRADUANDS

Executive Dean

CONGRATULATORY MESSAGE TO STUDENTS

ACKNOWLEDGEMENTS

Deputy Vice-Chancellor : Teaching Learning and Students Support Services

Vice-Chancellor & Principal Dissolves the Congregation

The Academic Procession leaves the hall, followed by Guests.

The congregation is requested to rise and remain standing when the academic procession enters and leaves the hall.

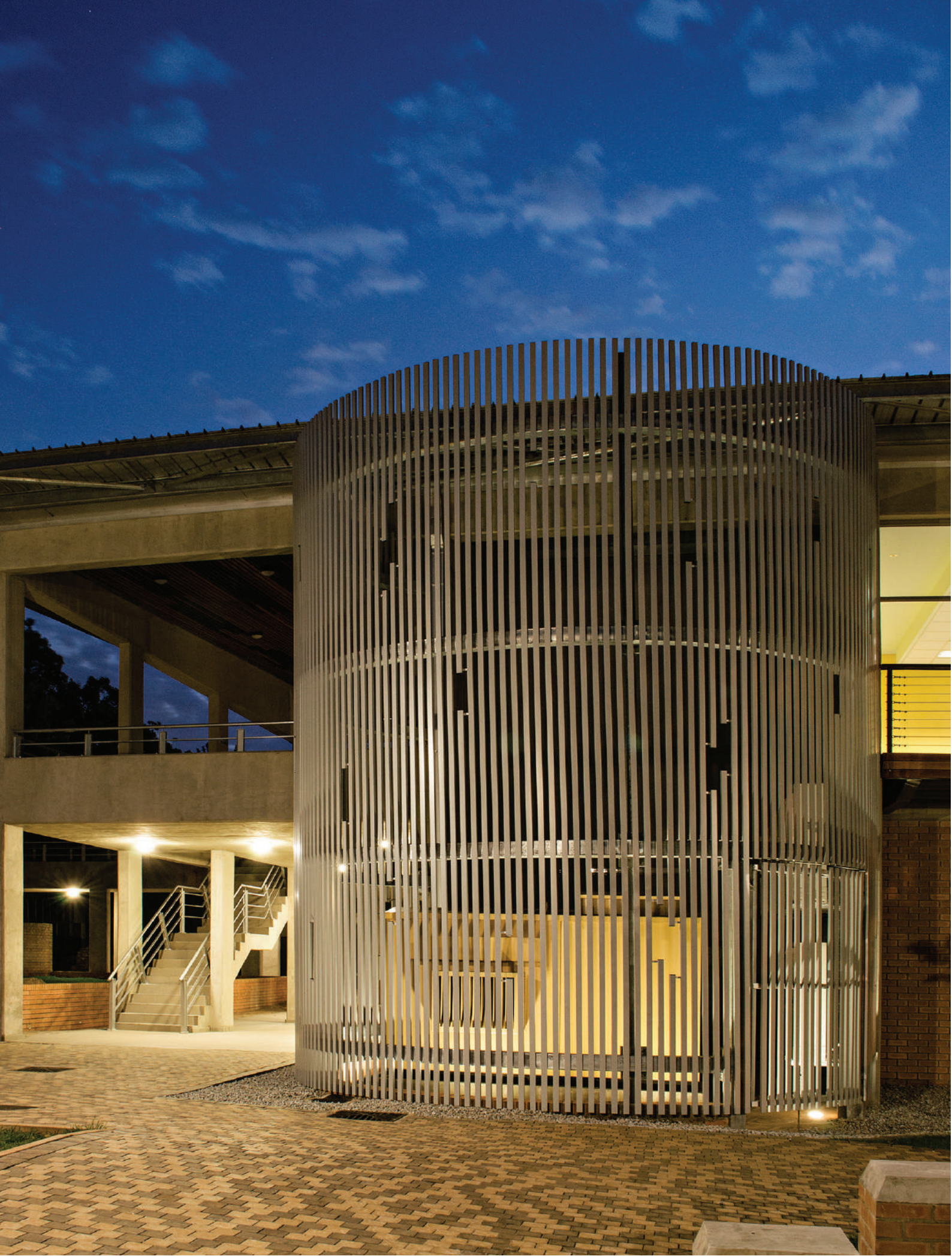
NATIONAL ANTHEM

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.

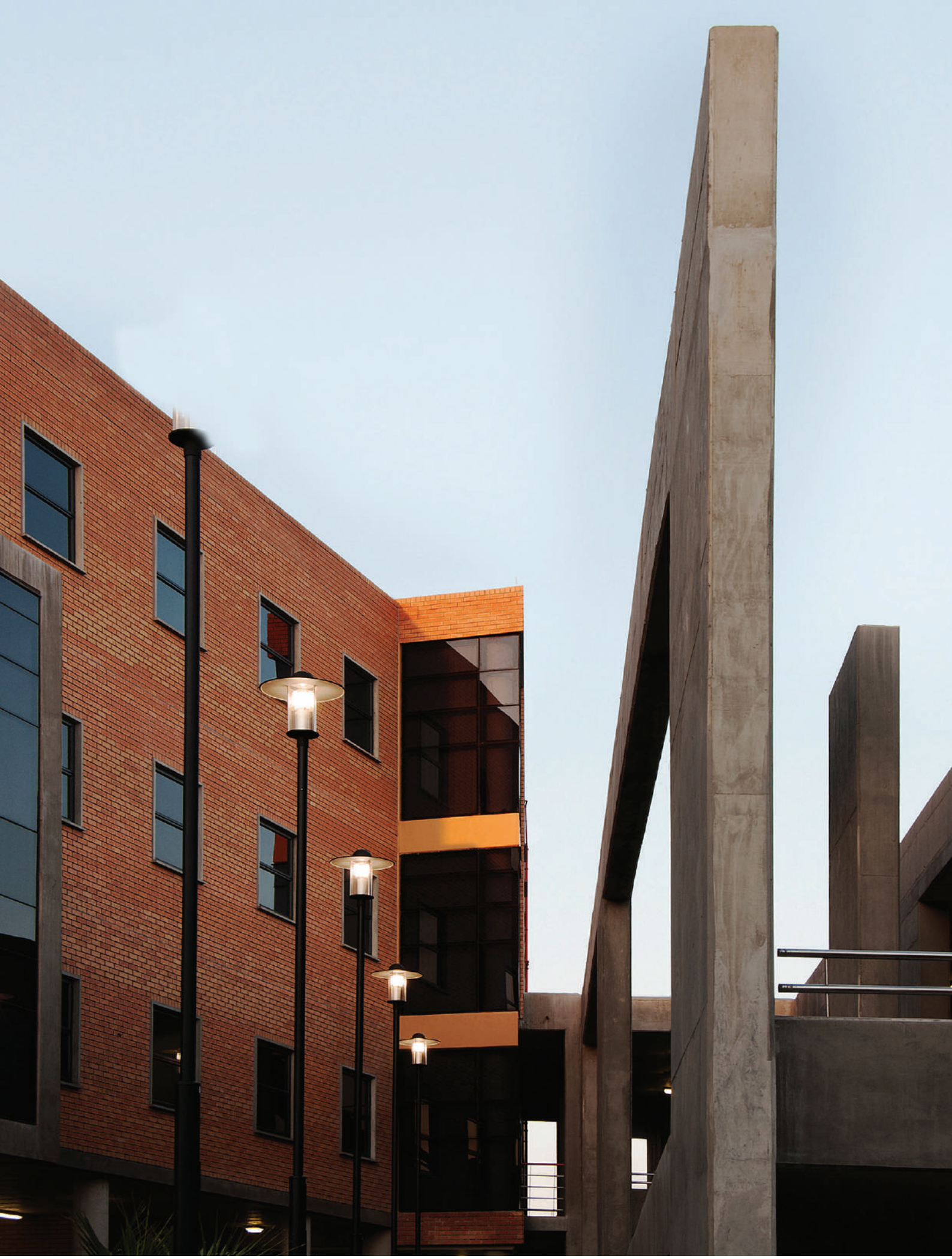


VAAL UNIVERSITY OF TECHNOLOGY

GENERAL ANNOUNCEMENTS

In order to maintain the dignity of the ceremony, you are requested to take note of the following:

- The congregation is requested to rise and remain standing when the academic procession enters and leaves the hall.
- Do not move around during the ceremony in order to take photographs.
- Please refrain from unacceptable actions such as whistling.
- Please switch off your cellphone.
- We strive to conduct the ceremonies in a dignified manner.
- Please do not leave the hall before the graduation proceedings have been concluded.
- Qualifications of candidates who are unable to attend the graduation ceremony will be conferred in absentia.



MASTER OF APPLIED SCIENCE IN BIOTECHNOLOGY (M+6)

CUM LAUDE*

NKHI Mpho Gladys*

DISSERTATION: Immobilisation of Lipase onto Functionalised Magnetic Nanoparticles

SUPERVISOR: Prof N Feto
CO-SUPERVISOR: Prof MJ Moloto

MASTER OF APPLIED SCIENCE IN CHEMISTRY (M+6)

CUM LAUDE*

MAMETJA Boitumelo Sharlotte*

DISSERTATION: Fabrication of Copper Chalcogenide Nanoparticles/Maize Corn Powder Nanocomposites for Water Treatment

SUPERVISOR: Prof T Xaba
CO-SUPERVISORS: Dr A Pholosi and Prof MJ Moloto

YAVAVA OKILY Amelia Yasmine

DISSERTATION: IncorporationofSilver/CopperNanoparticlesintoChitosan/Polyethylene Oxide blended nanofibers and their Antimicrobial Activity

SUPERVISOR: Prof MJ Moloto
CO-SUPERVISOR: Dr DS More (Hadebe)

MASTER OF INFORMATION AND COMMUNICATION TECHNOLOGY (M+6)

AKINPELU Tumisang Thabitha

DISSERTATION: Measuring the maturity of Agile Architecture in State Owned Organisations in Gauteng, South Africa - Case Study

SUPERVISOR: Dr R van Eck
CO-SUPERVISOR: Prof T Zuva

DOCTOR OF PHILOSOPHY (PhD): CHEMISTRY (M+7)

ATTAHDANIEL Emmanuel Baaku

THESIS: Synthesis, characterization of terephthalic acid metal-organic frameworks (mof), fabrication of polyethylene oxide mof composite and investigation of their dye adsorption properties

PROMOTER: Prof ED Dikio
CO-PROMOTERS: Prof MF Mtunzi, Dr PN Diagboya and Prof D Wankasi

ABSTRACT: Four MOFs, Lanthanum-1,4-benzene dicarboxylate (LaBDC), Zinc-1,4-benzene dicarboxylate (ZnBDC), Cerium-1,4-benzene dicarboxylate (CeBDC), and Manganese-1,4-benzene dicarboxylate (MnBDC)] were synthesized via a reflux-controlled solvothermal process from 1,4-benzene dicarboxylic acid as the organic linker and lanthanum, Zinc, Cerium and Manganese as the metal ions (secondary building units) using their nitrate salts and N,N-dimethylformamide (DMF) as the solvent. Two hydrogels [polyethylene oxide (PEO) and polyethylene oxide/lanthanum-1, 4-benzene dicarboxylate (PEO/LaBDC)] composites were prepared using glutaraldehyde as a crosslinker. These adsorbents were characterized and their methylene blue adsorption properties were studied.

The morphological features of LaBDC, ZnBDC, CeBDC and MnBDC and PEO hydrogel and PEO/LaBDC composite hydrogel were investigated using SEM/EDX analysis; FTIR analysis; X-ray diffraction analysis; BET analysis and thermo-gravimetric analysis. The adsorption rate data of MB involving LaBDC and CeBDC followed the fractal pseudo-second order model (FPSOM) while ZnBDC and MnBDC obeyed the pseudo second order model (PSOM). The MB adsorption process of each of the adsorbent MOFs was pH dependent. LaBDC and ZnBDC had MB adsorption capacity of 9.9 mg/g each at pH 12, and CeBDC and MnBDC had 22.5 mg/g and 8.1 mg/g adsorption capacity, respectively, at pH 8. The equilibrium studies revealed that the Freundlich isotherm best described the adsorption process of MB with adsorption capacities of 35.0, 55.0, 55.9 and 55.0 mg/g, respectively, in an endothermic, thermodynamically favourable and spontaneous process. On the other hand, the adsorption experiments of MB adsorption on PEO-PVA hydrogel and PEO/LaBDC composite hydrogels followed the FPSOM and PSOM, respectively, with enhanced MB adsorption in the alkaline region of 17.00 mg/g and 27.50 mg/g at pH 10 and 8, respectively. The comparison of the adsorption capacity of the composite to the pristine LaBDC adsorbent at the alkaline range of pH 12 showed a 177 % increase in adsorption of MB by the PEO/LaBDC composite hydrogel.

The study showed the promising potential of MOFs and the hydrogel composite for the effective removal of a typical nitrogen and sulphur atoms containing heterocyclic aromatic and toxic dye from dye wastewater.

DOCTOR OF PHILOSOPHY (PhD): INFORMATION AND COMMUNICATION TECHNOLOGY (M+7)

RANKAPOLA Madute Elias

THESIS: A model to measure the E-Learning system success at a University of Technology in South Africa

PROMOTER: Prof T Zuva
CO-PROMOTER: Prof S Lebelo

ABSTRACT: As e-learning systems adoption increases worldwide, their effectiveness and success measurement become imperative. Therefore, it is crucial to justify the investment made in e-learning systems by assessing their value and benefits within the academic field. Higher Education Institutions (HEIs) adopt and implement e-learning systems to enhance the quality of their teaching and learning practices, such as extending the teaching and learning space beyond physical locations, convenience, on-demand learning, self-paced learning, cost-effectiveness, time-efficient and flexible learning environments. However, some universities in developing countries encounter many challenges in implementing e-learning systems and eventually drop out of their e-learning system endeavours. This implies that universities in developing countries may face unique challenges compared to those in developed countries.

Therefore, the current study aimed to identify and investigate critical e-learning system success factors at universities of technology in South Africa and develop a comprehensive model to measure the e-learning system success. A literature review was conducted to achieve the research aims and objectives, and a research model that encompassed the variables: Technical System Quality (TSQ), Content & Information Quality (C&IQ), Educational System Quality (ESQ), Service Quality (SQ), User Self-Efficacy (USE), User Satisfaction (US), Intention to Use/Use (IU/U), Net Benefits and System Loyalty (SL). A cross-sectional survey was implemented using a 5-Likert scale electronic questionnaire to collect data from a sample of 654 participants studying Information and Communication Technology (ICT) from universities of technology in South Africa. The reliability was measured using Cronbach's alpha and all the values were greater than 0,73, higher than the threshold of 0.70 for acceptable reliability. Validity was conducted through convergent (AVE>0.5) and discriminant validity (AVE>ICCS). Factor analysis was done using Principal Component Analysis (PCA), and all nine constructs were retained after the analysis. The structural model displayed suitable model fit indices (CMIN/DF=3.514; CFI = 0.935; Normed Fit Index Root Mean Square Error of Approximation (NFI) = 0.953; Comparative fit index (CFI) = 0.959; AGFI = 0.880; Tucker-Lewis Index (TLI) = 0.926; and (RMSEA) = 0.068). These GoF results highlighted that the model was acceptable for deriving conclusions from the hypotheses tested. Pearson Correlation Analysis results showed positive relationships exist between the variables except for TSQ & USE. Multiple regression analysis indicated that USE→C&IQ (→= 0.183, <0.05); USE→ESQ (→ = 0.453, <0.05) USE→SQ (→ = 0.785,<0.05), USE→US (→ = 0.995, <0.05), US→USE (→ = 0.605, <0.05), IU/U→US (→ = 0.797, <0.05), NB→IU/US (→= 0.538, <0.05), IU/U→NB (→= 0.166, <0.05), SL→NB (→ = 0.736, <0.05) were statistically supported. The final model was then developed. The study contributed to the body of knowledge by highlighting critical factors that influence an e-learning system success at universities of technology in South Africa. The study provided a deep insight into the theories and models used for measuring system success. A modified model was developed. The model may be used by researchers to test system success in different settings and countries. Universities of Technology may use the model to guide the design, development, and adoption of e-learning systems.

VAAL UNIVERSITY OF TECHNOLOGY
MANAGEMENT SCIENCES

MASTER OF MANAGEMENT IN SUPPLY CHAIN MANAGEMENT (M+6)

CUM LAUDE*

MASHITJA Ramokone Maria*

DISSERTATION: The influence of supply chain relationship quality and co-operative strategy on supply chain quality performance in the south African clothing retail industry in Gauteng province

SUPERVISOR: Dr J Madzimure
CO-SUPERVISOR: Dr S Govuzela

DOCTOR OF PHILOSOPHY (PhD): BUSINESS ADMINISTRATION (M+7)

NEMATATANI Pfanelo

THESIS: Modelling internal management systems and supply chain effectiveness in state-owned enterprises in a developing economy

PROMOTER: Prof E Chinomona
CO-PROMOTERS: Dr ML Ntshingila and Prof C Mafini

ABSTRACT: The study tested a research model for internal management systems and supply chain effectiveness in SOEs in a developing economy. A quantitative design was adopted in which a survey questionnaire was administered to 863 supply chain practitioners working in six South African SOEs. The collected data were analysed using descriptive statistics, exploratory factor analysis, Pearson Correlations and regression analysis.

The study results showed significant positive relationships between organisation support development and total quality management, knowledge management and competitive advantage, behavioural integration and competitive advantage, safety management and competitive advantage as well as innovation. Innovation predicted competitive advantage, which in turn predicted supply chain relationship commitment and effectiveness.

Given the possibility that a study of this nature has not been performed before in South African SOEs, the results are an essential addition to the existing body of literature within the area of supply chain management (SCM) in the SOE sector in the country.

VAAL UNIVERSITY OF TECHNOLOGY
MANAGEMENT SCIENCES

DOCTOR OF PHILOSOPHY (PhD): BUSINESS ADMINISTRATION (M+7)

PETA Mamakoba George

THESIS: Perceived construction education and training authority's (ceta) strategic alignment barriers to technical and vocational education and training (tvet) colleges' participation in construction skills development

PROMOTER: Prof J Surujlal

ABSTRACT: The performance of the construction industry has a major effect on the Gross Domestic Product (GDP) of the country. However, it remains difficult for employers to find individuals with the required technical skills within the construction industry. Strategic alignment is a management model that seeks to align an organisation's objectives and internal domain with the objectives of the environment it operates in. The research was motivated by the poor participation of TVET colleges in construction skills development and aimed to identify the Construction Education and Training Authority's (CETA) strategic alignment barriers to South Africa's TVET colleges' participation in construction skills development.

An interpretive research paradigm and qualitative research methodology were adopted and applied in this study to address the research question. The study found that the CETA's strategic alignment approach has a contributing effect on TVET colleges' poor participation in construction skills development. The study proposed a strategic alignment framework which is conceptualised as PASSSPORT, - representing [business] Purpose, Aims, Services, Structure, Systems, Players, Opportunities, Reliances and Triggers. The proposed framework is a contribution to the body of knowledge and value-add to assisting the CETA (and potentially the entire SETA fraternity) in processes of strategic alignment.

VAAL UNIVERSITY OF TECHNOLOGY
ENGINEERING & TECHNOLOGY

MASTER OF ENGINEERING IN CHEMICAL ENGINEERING (M+6)

CUM LAUDE*

REDDY Trishen*
DISSERTATION: Modelling of the extraction of valuable compounds from Sclerocarya birrea
SUPERVISOR: Prof TG Seodigeng
CO-SUPERVISOR: Prof HL Rutto

MATHEBULA Themba Gerald
DISSERTATION: Physical and thermodynamic properties of binary and ternary blends of biodiesel and diesel-like fuels
SUPERVISOR: Prof HL Rutto
CO-SUPERVISOR: Prof TG Seodigeng

MATOBOLE Gloria Kgomotso
DISSERTATION: Modelling of the biomethane production from food waste using anaerobic digestion
SUPERVISOR: Prof TG Seodigeng
CO-SUPERVISOR: Prof HL Rutto

MAYOUDOM Lydie
DISSERTATION: Development and characterization of a novel coating for sintered NdFeB magnets to prevent corrosion
SUPERVISOR: Prof W Matizamhuka
CO-SUPERVISOR: Prof HL Rutto

SAMBO Sifiso Nation
DISSERTATION: The Development of a Heat Transfer Model for a Shaft Kiln to preheat Manganese Ore with hot air
SUPERVISOR: Prof TG Seodigeng
CO-SUPERVISOR: Dr. Q Reynolds

MASTER OF ENGINEERING IN MECHANICAL ENGINEERING (M+6)

CUM LAUDE*

SIGONDE Vhahangwele Colleen*

DISSERTATION: Enhancing gear fault diagnosis through analysis of eccentricity time-varying mesh stiffness and transmission error

SUPERVISOR: Prof AA Alugongo
CO-SUPERVISOR: Prof BX Tchomeni

LADIPO Taiwo Lolade

DISSERTATION: Mechanical and Crystallization Properties of Polyetheretherketone Polymer from Dry Solid Lubricants

SUPERVISOR: Prof LM Masu
CO-SUPERVISOR: Dr PK Nziu

MASTER OF ENGINEERING IN METALLURGICAL ENGINEERING (M+6)

JELI Ntsontso Edward

DISSERTATION: Process mineralogy for the physical beneficiation of a low-grade nickel laterite bearing ore

SUPERVISOR: Prof. P. Mendonidis
CO-SUPERVISOR: Dr. C. K. Motsetse

DOCTOR OF PHILOSOPHY (PhD): ENGINEERING CHEMICAL (M+7)

LUKUSA Kabeya Tresor

THESIS: Quantum Adsorption's Mechanism of Gelatin-Cellulose Hydrogel for Effective Removal of Copper and Cobalt ions from Wastewater using Artificial Neural Network

PROMOTER: Prof JK Tshilenge
CO-PROMOTER: Prof E Kalonda

ABSTRACT: Heavy metal ions are one of the most toxic materials in the environment and its increase in water leads to serious health problems because they are not biodegradable, hence the need to remove them from wastewater. Adsorption is the most used process for the removal of heavy metals from wastewater because is recognized as economical, effective and versatile method. Due to complex nature on adsorption process, ANN (Artificial Neural Network) have been found to be one the most promising numerical simulation techniques to make reliable predictions. In order to obtain extensive information on the adsorption process of metal ions on the functional groups of adsorbents (Gelatin-Cellulose Hydrogel), quantum adsorption mechanism was investigated using DFT (Density Functional Theory). n-GCHM and GCHM@Fe3O4 were used to remove Cu(II) and Co(II) metal ions from laboratory-prepared synthetic wastewater. Batch experiments were conducted to obtain the optimum conditions for the Cu(II) and Co(II) metal ions. The effect of parameters such as pH, contact time, and initial concentration were also determined. The optimal conditions found were 120 minutes of contact time and a pH of 5. The high percentage removal of Cu(II) was 70.5% with n-GCHM and 89.4% for Co(II) with GCHM@Fe3O4, all to the pH 5.

The experimental data conformed adequately to the film diffusion model for both metal ions at pH 5 with n-GCHM, but the Co(II) results fit well to the particle diffusion model with GCHM@Fe3O4. The molecular orbital approach (MOs) has shown that the HOMO and LUMO was located on the arginine (-NCN-) and LUMO on glutamine (-NCO-). The quantum adsorption mechanism has shown that the binding energy of Cu(II) and Co(II) on imine functional group (arginine) was of -60604.399 eV and -53649.06 eV, respectively. On -NCO- functional group (glutamine), the binding energy was of -58587.608 eV and -51632.618 eV, respectively for Cu(II) and Co(II).

VAAL UNIVERSITY OF TECHNOLOGY
ENGINEERING & TECHNOLOGY

DOCTOR OF PHILOSOPHY (PhD): ENGINEERING CHEMICAL (M+7)

SEODIGENG Reneiloe Christina Fina THESIS: Design and testing of a dry sanitation unit for treatment and disposal of human faeces

PROMOTER: Prof JK Tshilenge
CO-PROMOTER: Prof HL Rutto

ABSTRACT: The provision of safe and dignified sanitation in South Africa is currently hindered by a lack of resources such as water, infrastructure networks, and energy. The existing sewerage systems rely on costly networks of pipes and significant amounts of potable water, which is unsustainable especially in a water-scarce country like South Africa.

This research study was established under the re-invented toilet challenge and aimed to develop a concept for a dry sanitation unit that uses drying and thermochemical treatment to dispose of human faeces. During the research, a dry sanitation unit was conceptualized, developed from basic research to a working prototype that was tested. The project also aimed to develop a methodology or framework for designing sanitation systems that can guide further development of novel sanitation technologies. The parameters which affect drying and thermochemical treatment of human excreta were studied and used in conceptualizing and testing the prototype. The tested prototype showed that a dry sanitation technology can be implemented by varying conditions such as drying air flow rates and temperature to achieve drying of human excreta.

Most importantly, these conditions can be achieved using abundant wind and solar energy. Excreta can further be treated by thermochemical methods to render it safe for disposal. This research is a step towards designing sanitation solutions that are sustainable and equitable in resource constrained areas. The research will contribute towards achievement of SDG6.

VAAL UNIVERSITY OF TECHNOLOGY
HUMAN SCIENCES

MASTER OF MANAGEMENT IN FOOD AND BEVERAGE MANAGEMENT (M+6)

KHANGALA Ntshengedzeni Patience DISSERTATION: Determining hygiene and safety practices of students during culinary studies Skills practicals in a university of technology

SUPERVISOR: Prof JE Kearney
CO-SUPERVISOR: Prof EG Dicks

BURSARY INFORMATION

Dear Prospective Post Graduate Student,

At the Vaal University of Technology, VUT Research and Higher Degrees office offers several postgraduate courses to students who want to further their studies, and who want intellectual cultivation, character growth and personal development. We offer both Masters Degrees and Doctorate studies within four faculties.

At VUT Research we offer a Postgraduate Induction Programme for all our new or first-year postgraduate students. The objective of this programme is to ensure that all postgraduate students in the Faculties receive optimal support in their journey from the initiation until the completion of their studies. The programme requires regular and productive attendance to gather as much possible information on how to prepare an acceptable research proposal.

While the task may seem a daunting one, students can feel assured that they have the full support of and assistance of a professional supervisor for their course, as well as the support of the faculty at large. With these excellent support structures in place, students at the Vaal University of Technology may choose to specialise within their field of study or may decide to change to a field of study that they have not studied in before. Ultimately the student will explore new academic boundaries through conducting new research, expanding on existing research or conducting new methods of research and testing.

For more information, please visit www.vut-research.ac.za or email us on post.graduate@vut.ac.za for any enquiries.

Student Counselling and Support Career Services

- Student Counselling and Support Services is committed to offering career support, career counselling and guidance.
- Therapeutic counselling and support by Psychologists and Registered Counsellors
- Spiritual Guidance by Pastoral Counsellor
- Psycho-social Support by Social Worker
- Career Centre Support by Psychometrists include:
- Career Guidance
- Psychometric Testing
- Workplace Preparation
- CV writing
- Job hunting skills
- Interview skills
- Professionalism and ethics in the work place
- Academic Support:
- Learning difficulties/disabilities
- Concessions and Accommodations
- Adjustment to student life
- Study skills/time management
- Exam preparation
- Exam and test anxiety
- Personal Finance

Services Offered by Student Counselling to the Community :

Prospective students and External Clients can liaise with our department to enable them to make appropriate subject (Grade 9) and career (Grade 11/12) choice as well as graduate career development decisions.

Procedure to follow to access our services:

Phone (016) 950-9244 , email us at scs@vut.ac.za or visit us at P021

An initial interview will be arranged, after which a payment (R650.00) must be paid to cashiers situated at AW-Building at VUT main Campus and deposited into cost code 4220/5460. The receipt must be presented to Student Counselling and Support Services for an appointment to be booked. A booking for psychometric testing will be confirmed as soon as the proof of payment is received.

The payment includes the feedback session that will be scheduled after the psychometric testing to discuss the results and a copy of the report for future reference.

Career Assessments and Career Guidance Services are offered to Grade 9-12 Learners as well as those who have graduated and are looking to develop in their career.

For Further information, please contact
Student Counselling and Support Services :

Tel : (016) 950 9244 ; P-Block (P021-ground floor next to the SRC Office)

Email : scs@vut.ac.za
Facebook : VUT-Student Counselling Support
Twitter now called X : @SCSVut
Instagram: scs-vut
Podcast : "SCS VUT Mind Your Mental Health" on Spotify and Apple Podcast platforms

VAAL UNIVERSITY OF TECHNOLOGY

WELCOME TO CONVOCATION / ALUMNI NETWORK

Dear VUT Graduates
Congratulations on your achievements, to keep in touch with your Alma Mater please contact the following offices:

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