



20

RESEARCH REPORT



**VAAI UNIVERSITY
OF TECHNOLOGY**

Inspiring thought. Shaping talent.





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MESSAGE FROM THE VICE-CHANCELLOR AND PRINCIPAL

Despite the challenges that came with the Covid-19 pandemic as well as being placed under administration, on the Research front, 2022 was an exciting year for the Vaal University of Technology (VUT).

Members of the VUT community – from academics to professional and support staff, as well as the student body - contributed towards 2022 being a successful year for the core business at our Institution.

Among the positive outcomes of the past year is the end of the administration phase, which ushers in the appointment of a new Council and me as the new Vice-Chancellor. With a new leadership, VUT is positioning itself to become a vital role player in the Higher Education and University of Technology space.

I have profound appreciation for everyone who put their best foot forward to ensure the Institution remains afloat. VUT Researchers and Academics demonstrated resilience against the odds and worked hard to align their Research Outputs with national priorities.

I am pleased to report that VUT's Research Output is on an upward trajectory and that the number of NRF-rated Researchers continues to grow. We acknowledge that there is still room for growth and that we cannot be complacent. With the support of the Department of Higher Education and Training, VUT Management commits to strengthening and growing the University's Research productivity.

Moving forward, we want to see more emerging academics conducting research that will find their way into the web of science journals. We acknowledge the positive impact of the support that our many partners have provided

We are poised to ensure the VUT Research culture continues to reach new heights through the efforts of our researchers and post-graduate fellows.

In conclusion, I wish to extend gratitude to all internal and external stakeholders for their immense contribution to VUT's Research endeavours.

Prof D. Kgwadi

VICE-CHANCELLOR AND PRINCIPAL



MESSAGE FROM THE ACTING DEPUTY VICE-CHANCELLOR:

Research Innovation, Commercialisation & Internationalisation (RICI)

Managing Research and developing it in universities, especially Universities of Technology, demands continuous reflection on the changing definition of knowledge and intelligence in a developing knowledge environment and ongoing democratisation of knowledge and the explosion of accessible information.

The challenge is ensuring continuous relevance, effectiveness and efficiency in the Research enterprise. Considering the life span of ideas and the rapidly changing context, the demand for constant innovative approaches and practises to meet the need for time knowledge and interpretation now also demands the next phase in dealing with knowledge, namely to translate it into real solutions towards real innovation over and above invention or creativity.

Universities must reposition themselves in a context where unequal access to resources demands competition for scarce capacity and funding. As mentioned in the previous sentence, the Research process will require a clear focus, definition, direction and prioritisations. At the same time, the approach to managing knowledge needs attention in the context of intellectual property management and the demand for commercialisation.

The tension of the democratisation of information and providing everyone access to Research results continuously, to enhance further research or the close protection of intellectual products with a fundamental matter. The question around public and personal good is very prominent again. Universities, therefore, should find a third option in this dichotomy which provides for an arrangement around time or when, how and based on what format the information should be managed to serve both individual interests and common agenda. At the same time, universities should serve the teaching and learning agenda that stands central to its purpose. Conscious effort should, therefore, exist to inform curricula and universities' engagement agenda.

The Vaal University of Technology is continuously busy reflecting on the type of Research culture and the required capacity necessary to define research orientation and foundation of it as a new-generation university in the environment described above. The previous sentence informs debates like the nature and approach required to develop a work-based agenda for post-graduate study, to optimise the relevance and applicability of research, together with the issue of community-based scholarship. Through this reflection and related development, the Institution deals

with the challenge of bridging the artificial gap between basic and applied Research towards an approach that refers to applicable Research. Therefore, it is considered core to the mandate of VUT as a University of Technology to ensure that knowledge develops to the point where it addresses real needs or challenges. Such an approach inevitably demands the creation of and addressing new knowledge areas and also dealing with the application of new knowledge beyond the report stage to the technology phase.

The past year was, in all respects, an exciting period for research growth and development at the Institution. It is, therefore, essential to give recognition to all academic and professional staff who became part of the Research drive at the Institution. Special credit is also due to the research and post graduate offices for continuously meeting the challenge of innovation and flexibility to initiate new programs and accommodate the growing pressure.

The foundation VUT laid has been institutionalised and applied to the extent that future sustainable research growth and output is possible internally and especially with the growing external relations. Therefore, with excitement, the VUT approaches the opportunities ahead.

Dr S Nelana

ACTING DVC: RESEARCH INNOVATION,
COMMERCIALISATION &
INTERNATIONALISATION (RICI)



MESSAGE FROM THE ACTING DIRECTOR OF RESEARCH

In 2022, the Research Directorate remained unwavering supporting, and strengthening the University's research profile. Research is a strategic directive of the Vaal University of Technology (VUT), and as such, the office of the Research Directorate provides comprehensive Research Support Services to researchers. A range of Research services and resources are made available through the office of the Research Directorate to stimulate various research-related activities at the Institution.

The University Capacity Development Grant (UCDP) is one of the core funding sources at the VUT. The aim of this funding instrument in terms of Research is to enable an integrated approach towards research capacity building. In 2022, the Research Directorate continued with customised programmes to build research capacity utilising the UCDP grant. In addition, 11 workshops were organised in 2022 through the office of the Research Directorate to capacitate staff members with different research-related skills and knowledge. In total, 25 staff members across the University received UCDP funding to further their studies (Doctoral) in 2022.

The Research Directorate remains committed to increasing research productivity at the University. The 2022 Research Output units submitted to DHET for verification in 2023 were 127.832; the set target was 130 Research Output units. The University did not meet its target regarding the number of staff contributing towards Research Publication Outputs. A total of One hundred ninety two staff members contributed towards Research Publication Outputs as opposed to the target of 300.

The University exceeded its target regarding the number of postgraduate students enrolled for 2022. In 2022, 443 students registered for a Master's qualification and 125 students registered for a Doctoral qualification. In 2022, 90 students graduated with a Master's and 14 with a Doctoral qualification as opposed to the set targets of 37 and 7, respectively. Also, regarding Master's and Doctoral graduations, the University's targets were surpassed.

The University also secured funding in 2022 worth R 24,232,305.55 from external sources, almost meeting its target of R30 million. VUT is proud to report the approval of five new NRF-rated researchers for 2022. At the end of 2022, the University had 13 NRF-rated researchers. Regarding ethical clearance, the Central Research Ethics Committee (CREC) granted ethical clearance to 34 Research Projects, of which eight were internal and 26 external.

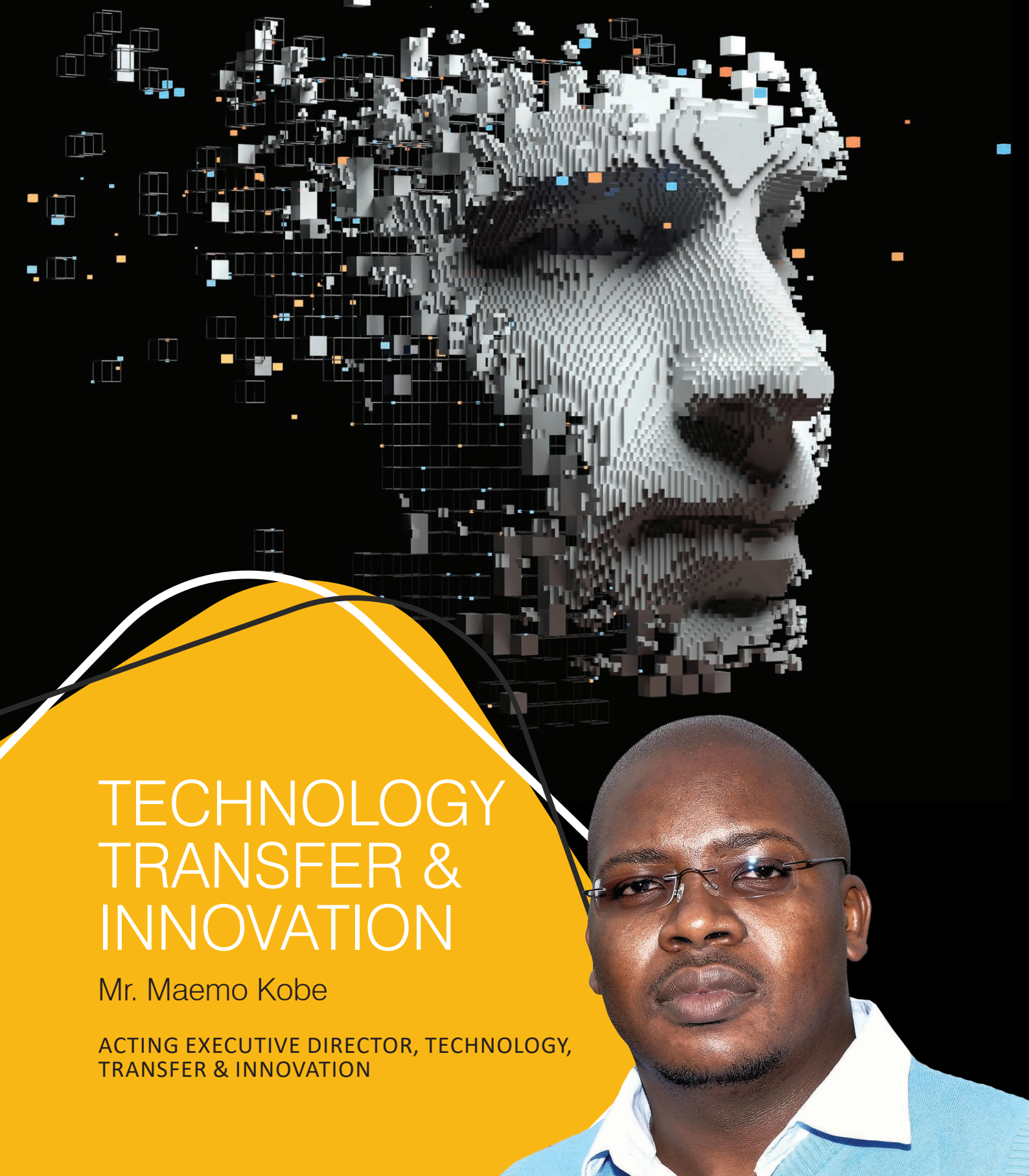
The office of the Research Directorate is proud of the progress that VUT has made in terms of meeting most of its Research-related targets. The University is still experiencing some challenges relating to research productivity, the academic qualifications of some staff members and the lack of supervisory capacity. Addressing these challenges soon is critical to enhancing VUT's Research activities and impact. As the office of the Research Directorate, we look forward to working with the students, academic and support team of VUT to increase Research productivity and create a Research-enabling environment.

Dr S. Burger

ACTING DIRECTOR OF RESEARCH







TECHNOLOGY TRANSFER & INNOVATION

Mr. Maemo Kobe

ACTING EXECUTIVE DIRECTOR, TECHNOLOGY,
TRANSFER & INNOVATION

MESSAGE FROM THE TEAM LEADER

The Technology Transfer and Innovation (TTI) Department falls under the Research, Innovation, Commercialisation, and Internationalisation portfolio. It is responsible for driving Innovation and Commercialisation within and for the benefit of the University.

The TTI was known throughout South Africa for housing the largest polymer Additive Manufacturing (AM) facility in the country and, at its peak performance in 2018, produced over 20 580 3D printed components for researchers, product developers, entrepreneurs and SMMEs.

The facility is still recovering from significant infrastructure damage that resulted in a downtime of its technology platforms, thereby significantly hampering its ability to operate, innovate, raise grants, generate income, and ultimately achieve its objectives. Nevertheless, the department turned its downtime and challenges into an opportunity to conduct internal operational restructuring and streamlining, as well as significant staff upskilling, training and research.

Expansion of the Science Park's research capabilities

The Adiviv Solutions Hyrax metal laser sintering system was procured and is expected to be installed in May 2023. This is the culmination of proposals written by Dr Wallace Matizamhuka (Ass. Professor: Chemical & Metallurgical Engineering) and TTI staff.

This will add a new metal-printing capability to VUT's arsenal of AM technologies and a powerful new research tool which will be leveraged in VUT's metallurgical, engineering and design research activities. The acquisition of this technology is sure to signal a renaissance in AM in the Vaal region.

Despite the many challenges the TTI continues to be affected by due to infrastructure damages, procurement difficulties, and reduced funding; the department still managed to achieve substantial, quantifiable outcomes regarding internal restructuring and expanding its collaborative network.

Furthermore, the TTI continues to play a meaningful role in developing the university strategy and the RIC strategy. The TTI is hopeful that if most of its challenges are addressed this year it will be able to make a substantial impact in innovation and third-stream income generation.

Mr. Maema Kabe

ACTING EXECUTIVE DIRECTOR FACULTY OF TECHNOLOGY,
TRANSFER & INNOVATION



Conferences (Papers and posters presented)

Presenter and co-presenters: Oluwaseun, A.A., Otunniyi, L.O. & Mauchline, D.

Title of Paper: Aging due to successive reuse of polyamide 12 powder during laser sintering: extrinsic powder properties and quality of sintered parts

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Presenter and co-presenters: Du Rand, F., Van Tonder, M., Van Der Merwe, A., Diegel, O., Hagedorn-Hansen, D., Campbell, I. & Gibson, I.

Title of Paper: Powder bed defects classification: an industry perspective

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Presenter and co-presenters: Shabanga, Y., Elgazzar, H.A., Havenga, S. & Campbell, I.

Title of Poster: Investigating the effect of process parameters on carbon fiber reinforced polyamide for fused deposition modeling

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Presenter and co-presenters: Mayila, N., Havenga, S. & Campbell, I.

Title of Poster: Comparative investigation to determine the mechanical properties of carbon-reinforced polymers and metal alloys

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Presenter and co-presenters: Ebhonu, T.M.B., Havenga, S. & Campbell, I.

Title of Poster: Aterial characterization of 3D printed fiber reinforced polymer composites in ambient environments

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Presenter and co-presenters: Mhlongo, O.E., Havenga, S. & Campbell, I.

Title of Poster: Experimental characterization and finite element modelling of carbon fiber-reinforced composites produced on mark forged and 5-axismaker

Conference: RAPDASA-RobMech-PRASA-CoSAAMI Conference

Place: Somerset West, South Africa

Date: 08-11 November 2022

ISBN/ISSN: MATEC Web of Conferences 370, 03011.

Publications (Journals)

Author and co-authors: Oluwaseun A. A., Otunniyi, L. O. & Mauchline, D.

Title: Correlation of reuse extent with degradation degree of PA 12 powder during laser powder bed fusion and mechanical behaviour of sintered parts.

Journal: Polymer Engineering & Science.

Volume: 63

Issue: 1

Page number of article:

ISSN: doi: 10.1002/pen.26191.

Author and co-authors: Oluwaseun, A. A., Otunniyi, L. O. & Mauchline, D.

Title: 3D-printed functional polymers and nanocomposites: defects characterization and product quality improvement.

Journal: Advanced Engineering Materials

Volume: 24

Issue: 5

ISSN: 2101219.

Author and co-authors: Oluwaseun, A. A., Otunniyi, L. O. & Mauchline, D.

Title: Highly conductive polymer composite based on graphite-filled immiscible polyolefin/epoxy blends.

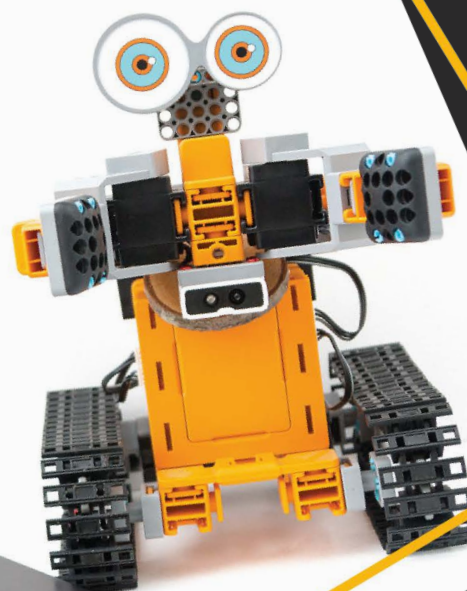
Journal: Key Engineering Materials

Volume:

Issue: 917

Page numbers of article:10-21

ISSN: 10139826





FACULTY OF APPLIED & COMPUTER SCIENCES

Prof CJ Grobler

EXECUTIVE DEAN FACULTY OF APPLIED &
COMPUTER SCIENCES

MESSAGE FROM THE EXECUTIVE DEAN

As the Faculty of Applied and Computer Sciences (FACS) embarks on a new chapter, I am delighted to share our vision for the future and the exciting opportunities ahead. It is my privilege to serve as the acting dean; I am honoured to lead a Faculty dedicated to excellence in education, research, innovation, internationalisation, and community engagement.

The FACS's journey began decades ago as a humble school with a vision to become a beacon of innovation and excellence in applied and computer sciences. Over the years, the Faculty has witnessed remarkable growth, fueled by the dedication and commitment of our exceptional researchers, staff members, and postgraduate students. Today, we stand at the forefront of cutting-edge scientific discovery and multi-disciplinary Research, offering comprehensive and innovative solutions to society.

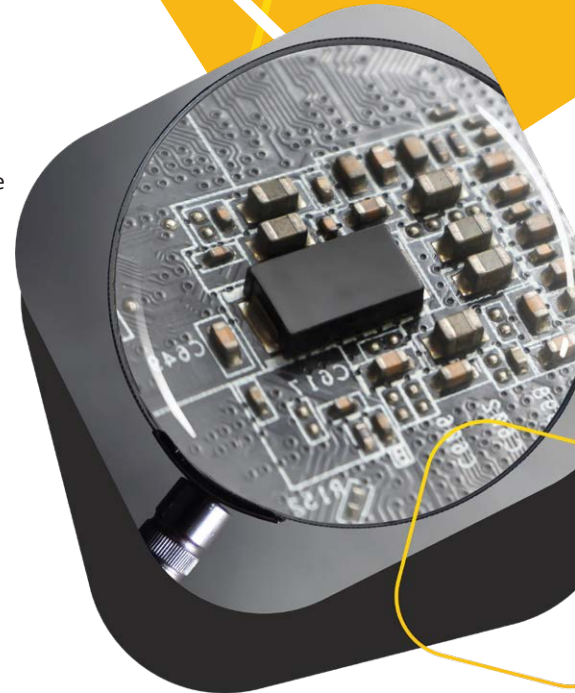
I want to take a moment to acknowledge the invaluable contributions of our previous dean, Prof BR Mabuza. Under his guidance, FACS made significant strides in research and scholarly pursuits. The focus on ethics, accurate data capture, and meticulous research design have laid a strong foundation for future endeavours. The FACS sincerely thanks Prof Mabuza for his leadership and dedication.

Moving forward, we are developing a Research Strategy that will guide our Access, Efficiency, and Visibility. This Strategy is designed to foster an environment where existing and potential research staff members and postgraduate students can thrive, innovate, and impact society. We believe that by enhancing access to resources, streamlining processes, and increasing the visibility of our research outcomes, we can unlock the full potential within FACS.

Our vision remains steadfast—to engage in cutting-edge scientific discovery and multi-disciplinary Research. We aim to be at the forefront of innovation, delivering comprehensive and innovative solutions to the challenges we face as a society. By embracing interdisciplinary collaboration and pushing the boundaries of knowledge, we will continue to pave the way for transformative advancements in applied and computer sciences.

Prof CJ Grabler

EXECUTIVE DEAN FACULTY OF APPLIED & COMPUTER SCIENCES



Conferences (Papers and posters presented)

Presenter and co-presenters: Mtunzi, F.M., Modise, J., Sera, P., Pakade, V., Shooto, D. & Klink, M.

Title of Paper: Effectiveness of activated carbon-moringa composite for the removal of arsenic in water by adsorption technique

Conference: American Advanced Materials Congress

Place: Miami, USA

Date: 29 October - 05 November 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mtunzi, F.M., Phele, M.J., Ejidike, I.P. & Diagboya, P.N.

Title of Paper: Adsorption of heavy metals from aqueous solutions by moringa oleifera pods and feldspar clay composite

Conference: American Advanced Materials Congress

Place: Miami, USA

Date: 29 October - 05 November 2022

ISBN/ISSN: 0976-0083

Presenter and co-presenters: Mtunzi, F.M., Onkani, S.P. & Diagboya, P.N.

Title of Paper: Comparative analysis of the photo-degradation of tetracycline under visible irradiation using pristine and Ag-doped ZnO photocatalysts

Conference: 2nd Commonwealth Chemistry Posters – Building Networks to Address the Goals

Place: Virtual / Poster Presentation

Date: 30 September - 01 October 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mtunzi, F.M., Onkani, S.P. & Diagboya, P.N.

Title of Paper: Photocatalytic degradation of chloramphenicol using Pristine and silver doped ZnO under LED irradiation

Conference: Nano Africa Conference 8th edition

Place: Cape Town

Date: 26-28 October 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mametja, B.S., Xaba, T., Pholosi, A. & Moloto, M.J.

Title of Paper: Fabrication of copper selenide nanoparticles incorporated with maize cob powder to form nanocomposites for the removal of Pb (II)

Conference: Nano Africa Conference 2022

Place: Cape Town

Date: 25-29 October 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mohlala, M.T., Xaba, T., Bambo, M. & Tetyana, P.

Title of Paper: Formation of spherical monodispersed silver nanoparticles with modified lee-meisel technique

Conference: Nano Africa Conference 2022

Place: Cape Town

Date: 25-29 October 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Jawore, A.M., Xaba, T. & Moloto, M.J.

Title of Paper: Synthesis of zinc sulfide nanoparticles and their thin films for solar cell application from a substituted thiourea ligand through thermal decomposition

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Dr Khotha, E., Xaba, T., Mtunzi, F. & Pakade, V.E.

Title of Paper: Synthesis of zinc chalcogenides nanoparticles from substituted thiourea and urea-based zinc complexes and the preparation of nanocomposites for water treatment

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mabungela, N., Shooto, N.D., Dikio, E.D., Modise, S.J., Monapathi, M.E., Mtunzi, F.M. & Xaba, T.

Title of Paper: Multi-application fennel-based composites for the adsorption of Cr(VI) ions from water and control of escherichia coli and staphylococcus aureus

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Onkani, S.P., Diagboya, P.N. & Mtunzi, F.M.

Title of Paper: Photo-degradation of chloramphenicol using pristine and Ag-doped ZnO photocatalysts

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: 171-185

Presenter and co-presenters: Mining, J.K., Moloto, J.M., Omwoyo, W.N. & Menge, D.

Title of Paper: Optimisation of chitosan-based polymer fibres using polyvinyl alcohol (PVA): towards slow biopesticide release activity against bean weevils

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Kiaka, J.P., Moloto, M.J. & More, D.S.

Title of Paper: Incorporation of extracts from pelargonium alchemilloides (l). L'herit into polyvinylpyrrolidone/ cellulose acetate blend via electrospinning technique and their antibacterial activity

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Okily, A.Y., More/Hadebe, D.S.

& Moloto, J.M.

Title of Paper: Incorporation of silver nanoparticles into chitosan/polyethylene oxide blended nanofibers using electrospinning technique

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Motlokoa, T.R., Viljoen, E.L. & Maboya, W.K.

Title of Paper: Fabrication of PVA mat impregnated with chlorinated carbon nanotubes pre-loaded with Fe_2O_3 nanoparticles for absorption of oil in aqueous solutions

Conference: The SACI Central Section Young Chemists' Symposium (YCS)

Place: University of the Witwatersrand (Online)

Date: 19 August 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Thabede, P.M., Shooto, N.D., Xaba, T. & Naidoo, E.B.

Title of Paper: Magnetite functionalised nigella sativa seeds for the uptake of chromium(vi) and lead(ii) ions from synthetic wastewater



Conference: AMRS (African Materials Research Society)

Place: Dakar, Senegal

Date: 10-15 December 2022

ISBN/ISSN: 6655227

Presenter and co-presenters: Maboya, W.K., Mmako, H.K., Coville, N.J., Mhlanga, S.D. & Maubane-Nkadimeng, M.S.

Title of Paper: Effect of chlorine on undoped and heteroatom doped carbon nanomaterials: their applications in electrochemistry

Conference: 2nd International Conference on Carbon Chemistry and Materials

Place: Rome, Italy

Date: 10-14 October 2022

ISBN/ISSN: N/A

Presenter and co-presenter: Pholosi, A. & Sanni, S.O.

Title of Paper: Synthesis of Fe_3O_4 coated pine crosslinked to CD and its adsorption behaviour for 4-NP

Conference: AMRS (African Materials Research Society)

Place: Dakar, Senegal

Date: 10-15 December 2022

ISBN/ISSN: 736-742

Presenter and co-presenter: Xaba, T., Magagula, J. & Nchoe, O.B.

Title of Paper: 'Green synthesis of Cu_2S nanoparticles from

(Z)-1-methyl-2- (pyrrolidine-2-ylidene)thiourea ligand for the preparation of Cu₂S-chitosan nanocomposites for the removal of Cr (VI) ion from wastewater'

Conference: American Advanced Materials Congress

Place: Miami, USA

Date: 29 October - 05 November 2022

ISBN/ISSN: N/A

Presenter: Xaba, T.

Title of Paper: "Green" synthesis of metal chalcogenide nanoparticles for the preparation of nanocomposites for the removal of metal ions from wastewater

Conference: 11th International Conference of the African Materials Research Society

Place: Dakar, Senegal

Date: 12-15 December 2022

ISBN/ISSN: 2021-0026

Presenter and co-presenters: Dr Khotha, E., Xaba, T., Mtunzi, F. & Pakade, V.E.

Title of Paper: Synthesis of zinc chalcogenides nanoparticles from substituted thiourea and urea-based zinc complexes and the preparation of nanocomposites for water treatment

Conference: 11th International Conference of the African Materials Research Society

Place: Dakar, Senegal

Date: 12-15 December 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Mtshatshenia, K.N.G., Zikalala, S.A., Naidoo, E.B., Nxumalo, E.N. & Ofomaja, A.E.

Title of Paper: Plant-based bio nanocomposites as modifiers for TiO₂: towards greener photocatalytic processes

Conference: 11th International Conference of the African Materials Research Society

Place: Dakar, Senegal

Date: 12-15 December 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Sibokoza, S.B., Moloto, M.J. & Moloto, N.

Title of Paper: Thermal decomposition of copper acetate at various temperatures and time to form copper oxide/ copper nanoparticles

Conference: 11th International Conference of the African Materials Research Society

Place: Dakar, Senegal

Date: 12-15 December 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Maboya, W.K., Mmako, H.K., Coville, N.J., Mhlanga, S.D. & Maubane-Nkadameng, M.S.

Title of Paper: Effect of chlorine on undoped and heteroatom-doped carbon nanomaterials: Their applications in electrochemistry.

Conference: 2nd International Conference on Carbon Chemistry and Materials

Place: Rome, Italy

Date: 10-14 October 2022

ISBN/ISSN: N/A

Presenter: Moletsane, R.

Title of Paper: The Investigation of ICT instruction and access impediments on women from disadvantaged urban community: a South African

Conference: 8th International Conference, with the theme Capacity Building for Inclusive Sustainable Development in Education, Teacher Preparation and Languages.

Place: Kigali, Rwanda

Date: 20-22 December 2022.

ISBN/ISSN: N/A

Presenter and co-presenter: Masimba, F. & Zuva, T.

Title of Paper: Trends in the adoption and acceptance of technology: challenges and open issues

Conference: CSOC 2022

Place: Online

Date: 26-30 April 2022

ISBN/ISSN: 2367-3389

Presenter and co-presenter: Hlungwani, N. & Zuva, T.

Title of Paper: A review on acceptance of recommender systems in higher education

Conference: CSOC 2022

Place: Online

Date: 26-30 April 2022

ISBN/ISSN: 2367-3389

Presenter and co-presenter: Jullies, B. & Zuva, T.

Title of Paper: Consumer readiness for adoption of IoT-smart homes (CRA-IoT-SH) in South Africa

Conference: CSOC 2022

Place: Online

Date: 26-30 April 2022

ISBN/ISSN: 2367-3389

Presenter and co-presenter: Kolo, I. & Zuva, T.

Title of Paper: Trends in the adoption and acceptance of technology: challenges and open issues

Conference: CSOC 2022

Place: Online

Date: 26-30 April 2022

ISBN/ISSN: 2367-3389

recommender systems
Conference: CSOC 2022
Place: Online
Date: 26-30 April 2022
ISBN/ISSN: 2367-3389

Presenter and co-presenters: Naidu, G., Sibanda, E.M. & Zuva, T.
Title of Paper: Systematic review on churn prediction systems in telecommunications
Conference: CSOC 2022
Place: Online
Date: 26-30 April 2022
ISBN/ISSN: 2367-3389

Presenter and co-presenter: Matshego, I. & Zuva, T.
Title of Paper: Hybrid radio frequency identification and global positioning system asset tracking
Conference: ICCCES 2022
Place: Singapore
Date: 20 March 2022
ISBN/ISSN: 2367-3370

Presenter and co-presenter: Julluies, B. & Zuva T
Title of Paper: Review on IoT Response to COVID-19 Pandemic, Challenges and Open Issues
Conference: ICCCES 2022
Place: Singapore
Date: 20 March 2022
ISBN/ISSN: 2367-3370

Presenter and co-presenters: Hlungwane, N.M., Sehume, O.M.M. & Zuva, T.
Title of Paper: Diffusion innovation, adoption, and acceptance of recommender systems in higher education
Conference: CSOC 2022
Place: Online
Date: 26-30 April 2022
ISBN/ISSN: 2367-3389

Presenter and co-presenters: Malatji, W.R., Van Eck, R. & Zuva, T.
Title of Paper: The role of gender, age and cultural differences in online information disclosure and privacy: a systematic review
Conference: CSOC 2022
Place: Online
Date: 26-30 April 2022
ISBN/ISSN: 2367-3389



Presenter and co-presenter: Masimba, F. & Zuva, T.
Title of Paper: A model for the adoption and acceptance of mobile farming platforms (MFPS) by smallholder farmers in Zimbabwe

Conference: CSOC 2022

Place: Online

Date: 26-30 April 2022

ISBN/ISSN: 2367-3389

Presenter and co-presenter: Ovono, G. & Moyo, S.
Title of Paper: A goal modelling for linked data exploitation of municipalities data access in South Africa

Conference: CoMeSySo 2022

Place: Online

Date: 01 December 2022

ISBN/ISSN: 234-248

Presenter and co-presenter: Ovono, G. & Moyo, S.
Title of Paper: Conceptual linked data model for South African municipalities public services domain

Conference: CoMeSySo 2022

Place: Online

Date: 03 December 2022

ISBN/ISSN: N/A

Presenter and co-presenters: Monapathi, M.E., Meno, M., Klink, M. & Modise, S.J.
Title of Paper: Determination of purification efficiency of selected wetlands in the Vaal region, South Africa, using heavy metals and microbial determinants

Conference: WISA Biennial Conference 2022.

Place: Sandton Convention Centre, South Africa. 2

Date: 28-30 September 2022

ISBN/ISSN: N/A

Seminars/Workshops Presented

Title: Women's Celebration Dialogue

Presented to: VUT Community

Place: Vaal University of Technology

Date: 12 October 2022

Title: Synthesis and characterisation of mixed nano phosphors doped with rare earth ions

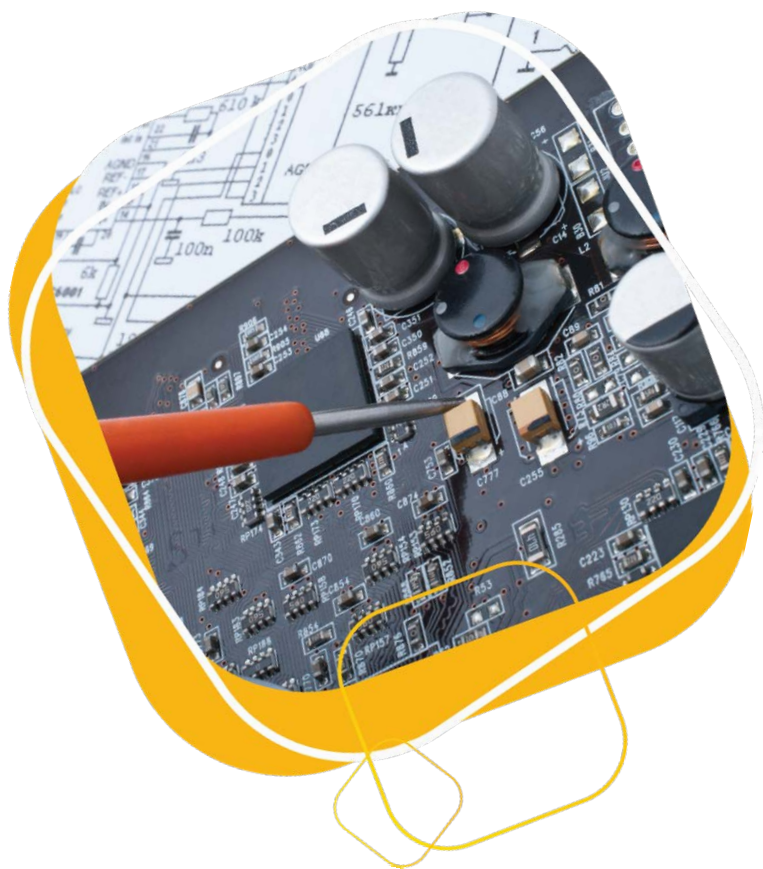
Presented to: WITS 2022 symposium.

Place: University of the Witwatersrand

Date: 24 November 2022

Publications (Books/Chapters in Books)

Author and co-authors: Taka, A.L., Klink, M., Mbianda, X.Y., Mtunzi, F. & Naidoo, E.B.



Chapter: Carbon Nanotubes Reinforced Polymeric Hybrid Materials for Water Purification

Title: Nanohybrid materials for water purification

Publisher: Springer, Singapore

Date: 13 August 2022

Page numbers of chapter: 197–223

ISBN: 978-981-19-2331-9

Author and co-authors: Pillay, M., Takaidza, S., Terblanche, U. & Madike, L.

Chapter: Conservation on Medicinal Plant Genetic Resources in Southern Africa

Title: Plant genetic resources, inventory, collection and conservation

Publisher: Springer Nature, Singapore

Date: 22 June 2022

Page numbers of chapter: 319-338

ISBN: 978-981-16-7699-4-15

Author and co-authors: Baburam, C. & Feto, N.A

Chapter: Bacillus spp and their Invaluable Roles in Petroleum Hydrocarbon Bioremediation

Title: Bacilli in agrobiotechnology. bacilli in climate resilient agriculture and bioprospecting

Publisher: Springer Verlag

Date: April 2022
Page numbers of chapter:101-126
ISBN: 978-3-030-85464-5

Author: Ssemakalu, C.C.
Chapter: Solar Disinfection: Managing Waterborne Salmonella Outbreaks in Resource-poor Communities
Title: Salmonella - past, present and future [working title].
Publisher: Springer Verlag
Date: April 2022
Page numbers of chapter:101-126
ISBN: 978-1-83962-474-2

Author: Moletsane, R.
Chapter: Software Engineering Application in Systems Design
Title: Determining the level of awareness of electronic waste impact on the environment among students at the University of Technology
Publisher: Springer, Cham
Date: 01 January 2023
Page numbers of chapter: 1-10
ISBN: (Online) 978-3-031-21435-6 (Print) 978-3-031-21434-9

Author: Moletsane, R.
Chapter: Software Engineering Application in Systems Design
Title: Assessment of the awareness level of e-waste and factors that influence informal recycling
Publisher: Springer, Cham
Date: 01 January 2023
Page numbers of chapter: 11-20
ISBN: (Online) 978-3-031-21435-6 (Print) 978-3-031-21434-9

Publications (Journals)

Author and co-authors: Okoli, B.J., Ladan, Z., Nnemeka, I. & Mtunzi, F.
Title: Chemotaxonomy of *Vitex negundo* L. essential oil from six states of the north-central geopolitical zone of Nigeria
Journal: Journal of Medicinal Plants
Volume: 14
Issue: 4
Page numbers of article: 564-571
ISSN: 1684-0240

Author and co-authors: Attahdaniel, E., Mtunzi, F., Donbebe, W., Nimibofa, A., Dikio, E.D. & Diagboya, P.N.
Title: Relative empirical evaluation of the aqueous sequestration of methylene blue using benzene-1,4-dicarboxylic acid-linked lanthanum and zinc metal-organic frameworks
Journal: Water Air and Soil Pollution
Volume: N/A

Issue: N/A
Page numbers of article: 442
ISSN: 1573-2932

Author and co-authors: Mtunzi, F., Ladan, Z. & Okoli, B.
Title: Efficacy and safety of essential oils in the control of mosquito: a review of research findings
Journal: International Journal of Chemistry
Volume: 14 No.2
Issue: N/A
Page numbers of article: 45-58
ISSN: 1916-9698

Author and co-authors: Mtunzi, F.M., Masite, N.S., Ncube, S., Madikizela, L.M. & Pakade, V.E.
Title: Trace metals, crude protein, and TGA-FTIR analysis of evolved gas products in the thermal decomposition of roasted mopane worms, sweet corn, and peanuts
Journal: International Journal of Food Science
Volume: 2022
Issue: N/A
Page numbers of article: 1-12
ISSN: 1082-0132



Author and co-authors: Mtunzi, F.M., Akpotu, S.O., Lawal, I.A., Diagboya, P.N., & Ofomaja, A.E.

Title: Engineered geo-media kaolin clay-reduced graphene oxide-polymer composite for the remediation of olaquinox from water.

Journal: ACS Omega

Volume: N/A

Issue: N/A

Page numbers of article: 34054–34065

ISSN: 2470-1343

Author and co-authors: Phele, M.J, Ejidike, I.P. & Mtunzi, F.
Title: Adsorption of heavy metals from aqueous solutions by moringa oleifera pods and feldspar clay composite

Journal: Rasayan Journal of Chemistry

Volume: N/A

Issue: N/A

Page numbers of article: 2095-2102

ISSN: 0974-1496

Author and co-authors: Mabungela, N., Shooto, N.D., Mtunzi, F. & Naidoo, E.B.

Title: Binary adsorption studies of Cr(VI) and Cu(II) ions from synthetic wastewater using carbon from foeniculum vulgare (fennel seeds)

Journal: Cogent Engineering

Volume: N/A

Issue: N/A

Page numbers of article: 2119530

ISSN: 2049-3630

Author and co-authors: Laloo, N., Klink, M.J., Taka, A. L., Pakade, V.E., Monapathi, M.E. & Modise, J.S.

Title: Synthesis, characterisation and antimicrobial activity of zinc oxide nanoparticles against selected waterborne bacterial and yeast pathogens.

Journal: Molecules

Volume: 27

Issue: 11

Page numbers of article: 3532

ISSN: 1420-3049

Author and co-authors: Mtunzi, F.M., Mabungela, N., Shooto, N.D., Dikio, E.D., Modise, S.J., Monapathi, M.E., Xaba, T. & Naidoo, E.B.

Title: Multi-application fennel-based composites for the adsorption of Cr(VI) ions from water and control of escherichia coli and staphylococcus aureus

Journal: Environmental Chemistry and Ecotoxicology

Volume: 4

Issue: 4

Page numbers of article: 171-185

ISSN: 2590-1826



Author and co-authors: Abasi, C., Attahdaniel, E., Mtunzi, F. & Dikio, E.D.

Title: Post-synthetic modification of metal-organic frameworks with substituted layered double hydroxides for adsorption of lead ions

Journal: Composites and Nano Engineering

Volume: N/A

Issue: 2022

Page numbers of article: 1-15

ISSN: 2523-9015

Author and co-authors: Mtunzi, F., Mabungela, N., Shooto, N.D. & Naidoo, E.B.

Title: The Adsorption of copper, lead metal ions, and methylene blue dye from aqueous solution by pure and treated fennel seeds

Journal: Adsorption Science & Technology

Volume: 2022

Issue: N/A

Page numbers of article: 1-20

ISSN: 2048-4038

Author and co-authors: Mtunzi, F.M., Olu-Owolabi, B.I., Diagbaya, P.N., Adebawale, K.O. & Düring, R-A.

Title: Empirical aspects of an emerging agricultural pesticide contaminant retention on two sub-Saharan soils

Journal: Gondwana Research

Volume:

Issue: 105

Page numbers of article: 311-319

ISSN: 1342-937X

Author and co-authors: Mtunzi, F.M., Diagbaya, P.N., Adebawale, K.O., Düring, R-A. & Olu-Owolabi, B.I.

Title: Comparative empirical evaluation of the aqueous adsorptive sequestration potential of low-cost feldspar-biochar composites for ivermectin

Journal: Colloids and Surfaces A: Physicochemical and Engineering Aspects

Volume: 634

Issue: N/A

Page numbers of article: 127930

ISSN: 0927-7757

Author and co-authors: Mtunzi, F.M., Akpotu, S.O., Diagbaya, P.N., Lawal, I.A., Sanni, S.O., Pholosi, A., Peleyeju, M.G., & Ofomaja, A.E.

Title: Engineered montmorillonite-reduced graphene oxide-polymer composite for water treatment: enrofloxacin sequestration and cost analysis

Journal: SSRN Electronic Journal

Volume: N/A

Issue: N/A

Page numbers of article: 139771

ISSN: 1556-5068

Author and co-authors: Maboya, W.K., Maubane-Nkadimeng, M.S., Jijana, A.N. & Mmako, H.K.

Title: Nitrogen inclusion in carbon nanotubes initiated by boron doping and chlorination: their use as electrocatalysts for oxygen reduction reaction

Journal: Frontiers in Materials

Volume: 9

Issue: N/A

Page numbers of article: 886471

ISSN: 22968016

Author and co-author: Thabede, P.M. & Shooto, N.D.

Title: Binary adsorption of chromium and cadmium metal ions by hemp (cannabis sativa) based adsorbents

Journal: Environmental Nanotechnology, Monitoring & Management

Volume: 19

Issue: N/A

Page numbers of article: 100683

ISSN: N/A

Author and co-authors: Maphiri, V.M., Melato, L.T., Mhlongo, M.R., Hlatwayo, T.T., Motaung, T.E., Koao, L.F. & Motloung, S.V.

Title: Effects of varying Alx moles on the structure and luminescent properties of ZnAlxO1.5x+1:0.1 mol% Tb3+ nano phosphors prepared using citrate sol-gel method

Journal: Journal of Rare Earth

Volume: 41

Issue: 3

Page numbers of article: 358-364

ISSN: 1002-0721

Author and co-authors: Thabede, P.M & Shooto, N.D.

Title: Application of black cumin (nigella sativa L.) seeds for the removal of metal ions and methylene blue from aqueous solutions

Journal: Cogent Engineering

Volume: 9

Issue: 1

Page numbers of article: 2013419

ISSN: N/A

Author and co-authors: Pakade, V.E., Mokgope, H., Taka, A.L., Klink, M.J. & Warmsley, T.

Title: Quantification of some ARV's removal efficiency from wastewater using a moving bed biofilm reactor

Journal: Water Science and Technology

Volume: 86
Issue: 11
Page numbers of article: 2928-2942
ISSN: 0273-1223

Author and co-authors: Pakade, V.E., Madikizela, L.M., Ncube, S. & Nomngongo, P.N.
Title: Molecular imprinting with deep eutectic solvents: synthesis, applications, their significance, and benefits
Journal: Journal of Molecular Liquids
Volume: 362
Issue: N/A
Page numbers of article: 119696
ISSN: 0167-7322

Author and co-authors: Pakade, V.E., Koya, A.D., Qhubu, M.C. & Moyo, M.
Title: Scavenging of hexavalent chromium from aqueous solution by macadamia nutshell biomass modified with diethylenetriamine and maleic acid
Journal: Environmental Research
Volume: 212
Issue: N/A
Page numbers of article: 113445
ISSN: 0013-9351

Author and co-authors: Pakade, V.E., Masinga, T. & Moyo, M.
Title: Removal of hexavalent chromium by polyethyleneimine impregnated activated carbon: intra-particle diffusion, kinetics and isotherms
Journal: Journal of Materials Research and Technology
Volume: 18
Issue: N/A
Page numbers of article: 1333 - 1344
ISSN: 2238-7854

Author and co-authors: Pakade, V.E., Masite, N.S., Ncube, S., Mtunzi, F.M. & Madikizela, L.M.
Title: Determination of furanic compounds in *mopane* worms, corn, and peanuts using headspace solid-phase microextraction with gas chromatography-flame ionisation detector
Journal: Food Chemistry
Volume: 369
Issue: N/A
Page numbers of article: 130944
ISSN: 0308-8146

Author and co-authors : Pakade, V.E., Jakavula, S., Biata, N.B., Dimp, M. & Nomngongo, P.N.
Title: A critical review on the synthesis and application of ion-imprinted polymers for selective pre-concentration, speciation, removal and determination of trace and essential metals

from different matrices
Journal: Critical Reviews in Analytical Chemistry
Volume: 52
Issue: 2
Page numbers of article: 314 - 326
ISSN: 1040 8347

Author and co-authors: Pakade, V.E., Madikizela, L.M. & Nomngongo, P.N.
Title: Synthesis of molecularly imprinted polymers for extraction of fluoroquinolones in environmental, food and biological samples
Journal: Journal of Pharmaceutical and Biomedical Analysis
Volume: 208
Issue: N/A
Page numbers of article: 114447
ISSN: 0731-7085

Author and co-authors: Pakade, V.E., Jakavula, S., Biata, N.R., Dimpe K.M. & Nomngongo, P.N.
Title: Magnetic ion-imprinted polymers (MIIPs) for selective extraction and pre-concentration of Sb(III) from environmental matrices
Journal: Polymers
Volume: 14
Issue: 1
Page numbers of article: 21
ISSN: 20734360

Author and co-authors: Pakade, V.E., Qhubu, M.C., Methula, B., Xaba T. & Moyo, M.
Title: Iron-zinc impregnated biochar nanocomposite as a promising adsorbent for the removal of toxic hexavalent chromium: Kinetics, isotherms and thermodynamics
Journal: Chemistry Africa
Volume: 5
Issue: N/A
Page numbers of article: 1797 - 1807
ISSN: 2522 5758

Author and co-authors: Saliu, T.D., Lawal, I.A., Akinyeye, O.J., Bulu, Y.I., Klink, M., Ololade, I.A. & Nurudeen Abiola Oladoja
Title: Biocoagulant with frother properties for harvesting invasive microalgae colonies from the eutrophicated system
Journal: ACS Sustainable Chemistry & Engineering
Volume: 10
Issue: 15
Page numbers of article: 5024-5034
ISSN: 21680485

Author and co-authors: Aremu, O.H., Akintayo, C.O., Nelana,

S.M., Klink, M.J. & Ayanda, O.S.

Title: Optimisation of influential parameters for the degradation of metronidazole contained in aquaculture effluent via sonocatalytic process: kinetics and mechanism

Journal: Nature Environment and Pollution Technology

Volume: 21

Issue: 4

Page numbers of article: 1875-1885

ISSN: 2395-3454

Author and co-authors: Ayanda, O.S., Amodu, O.S., Abasi, C.Y., Klink, M.J., Nelana, S.M. & Olatunji, O.S.

Title: Self-assembly peptides-a review

Journal: OnLine Journal of Biological Sciences

Volume: 22

Issue: 3

Page numbers of article: 309.322

ISSN: 16084217

Author and co-authors: Hosnedlova, B., Kabanov, D., Kepinska, M.B., Narayanan, V.H., Parikesit, A.A., Fernandez, C., Björklund, G., Nguyen, H.V., Farid, A., Sochor, J. & Pholosi, A.

Title: Effect of biosynthesised silver nanoparticles on bacterial biofilm changes in *S. aureus* and *E. coli*.

Journal: Nanomaterials

Volume: 12

Issue: N/A

Page numbers of article: 2183

ISSN: 20794991

Author and co-authors: Masuku, M., Ouma, L., Sanni, S. & Pholosi, A.

Title: Optimisation studies of BTX removal by magnetite-coated oleic acid obtained from microwave-assisted synthesis using response surface methodology

Journal: Scientific Reports

Volume: 12

Issue: N/A

Page numbers of article: 18609

ISSN: 20452322

Author and co-authors: Ouma, L., Pholosi, A. & Onani, M.

Title: Optimising Cr(VI) adsorption parameters on magnetite (Fe_3O_4) and manganese doped magnetite ($\text{Mn}_x\text{Fe}_{(3-x)}\text{O}_4$) nanoparticles

Journal: Physical Sciences Reviews

Volume: 2022

Issue: N/A

Page numbers of article: N/A

ISSN: 2365659X



Author and co-authors: Sanni, S.O., Moundzounga, T.H.G., Oseghe, E.O., Haneklaus, N.H., Viljoen, E.L. & Brink, H.G.
Title: One-step green synthesis of water-soluble fluorescent carbon dots and its application in the detection of Cu²⁺
Journal: Nanomaterials
Volume: 12
Issue: N/A
Page numbers of article: 958
ISSN: 20794991

Author and co-authors: Ojo, O.O., Fatokun, D.I., Ejidike, I.P., Awolope, R.U. & Sanni, S.O.
Title: Quercetin zinc and iron metal complexes protect against sodium arsenite intoxication in the hepato-renal system of wistar rats via the oxidative stress pathway
Journal: Journal of Toxicology
Volume: 2022
Issue: N/A
Page numbers of article: 6178261
ISSN: 16878191

Author and co-authors: Monapathi, M.E., Mabungela, N., Shooto, N.D., Dikio, E.D., Modise, S.J., Mtunzi, F.M. & Xaba, T.
Title of Paper: Multi-application fennel-based composites for the adsorption of Cr (VI) ions from water and control of escherichia coli and staphylococcus aureus (2022).
Journal: Environmental Chemistry and Ecotoxicology
Volume: N/A
Issue: N/A
Page numbers of article: 171-185
ISBN/ISSN: <https://doi.org/10.1016/j.enceco.2022.09.001>

Author and co-authors: Monapathi, M.E., Klink, M.J., Laloo, N., Pakade, V. & Modise, S.J.
Title: Synthesis, characterisation and antimicrobial activity of zinc oxide nanoparticles against selected waterborne bacterial and yeast
Journal: Molecules
Volume: 27
Issue: 11
Page numbers of article: 3532
ISSN: 14203049

Author: Mzinyane, N.N.
Title: Adsorption of heavy metals from acid mine drainage using poly (hydroxamic acid) ligand
Journal: South African Journal of Chemical Engineering
Volume: 42
Issue: N/A
Page numbers of article: 318-336
ISSN: 10269185



Author and co-authors: Oyetade, K.E., Zuva, T. & Harmse, A.
Title of Paper: Educational benefits of hackathon: a systematic literature review
Journal: World Journal on Educational Technology (WJET)
Volume: N/A
Issue: N/A
Page numbers of article: 1668-1684
ISBN/ISSN: 1309-0348

Author and co-authors: Oyetade, K.E., Zuva, T. & Harmse, A.
Title: Factors influencing hackathon adoption for learning information technology (I.T.) programming modules
Journal: TEM Journal
Volume: N/A
Issue: N/A
Page numbers of article: 1165-117
ISSN: 2217-8309

Author and co-author: Sonhera, N. & Mhlanga, D.
Title: Reducing cyber incidents through good online behavioural norms: lessons from South Africa.
Journal: Eurasian Journal of Social Sciences
Volume: 10
Issue: 1
Page numbers of article: 37-48
ISSN: N/A

Author: Sonhera, N.
Title: Cyber incident handling framework for schools in South Africa: views of experts
Journal: Journal of Higher Education Theory and Practice
Volume: 22
Issue: 17
Page numbers of article: 120-140
ISSN: N/A

Research in Progress

Researcher: Maboya, W.K.
Title: Modified carbon nanotubes as electrochemical detectors and adsorbents for persistent pharmaceuticals
Field: Electrochemistry

Researcher: Xaba, T.
Title: Synthesising nanomaterials using green methods and preparing nanocomposites for water treatment
Field: Nanotechnology and adsorption

Researcher: Dlamini, C.
Title: Synthesis and characterisation of mixed nano phosphors co-activated with rare earth ions.
Field: Nanomaterials

Researcher: Ngcakaza, I.N.
Title: Protective effects of cocoa (theobroma cacao) against antiretroviral therapy and type 2 diabetes mellitus-induced changes in the male sprague dawley rat brain
Field: Biomedical Technology (PhD)

Researcher: Ssemakalu, C.C.
Title: Screening for retained intronic sequences exclusive to colorectal cancerous tissue
Field: Cell Biology and Immunology

Researcher: Terblanche, U.
Title: Characterisation of biomaterials incorporated with plant extracts for tissue regeneration purposes
Field: Cell Biology and Tissue regeneration
Research Partnerships with Industry or Community Groups

Researcher: Mtunzi, F.M.
Title of research: Cannabis Research
Industry: GDARD

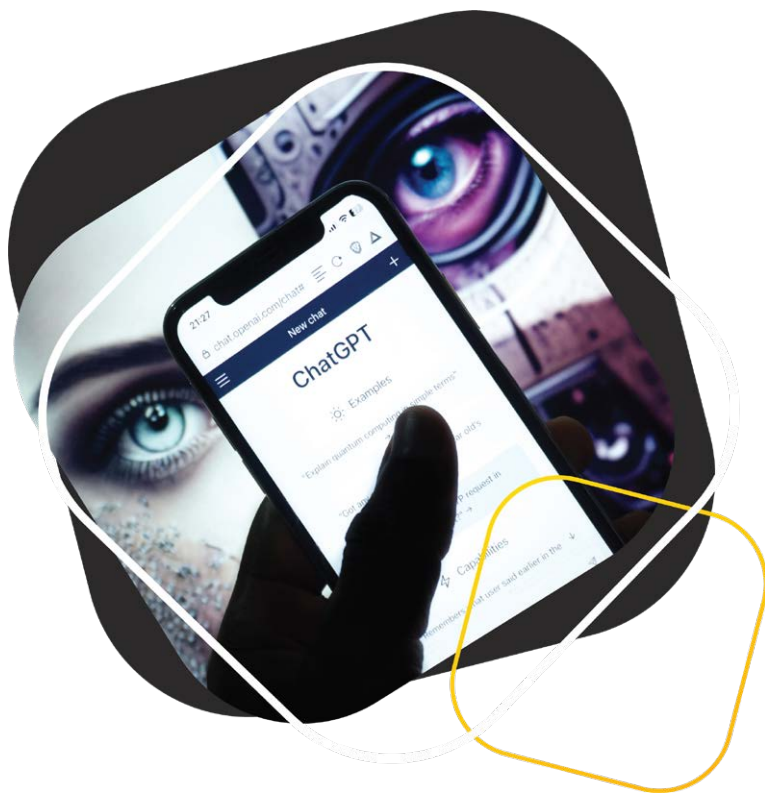
Researcher: Mtunzi, F.M.
Title of research: Small Business incubations
Industry: CHEMIN

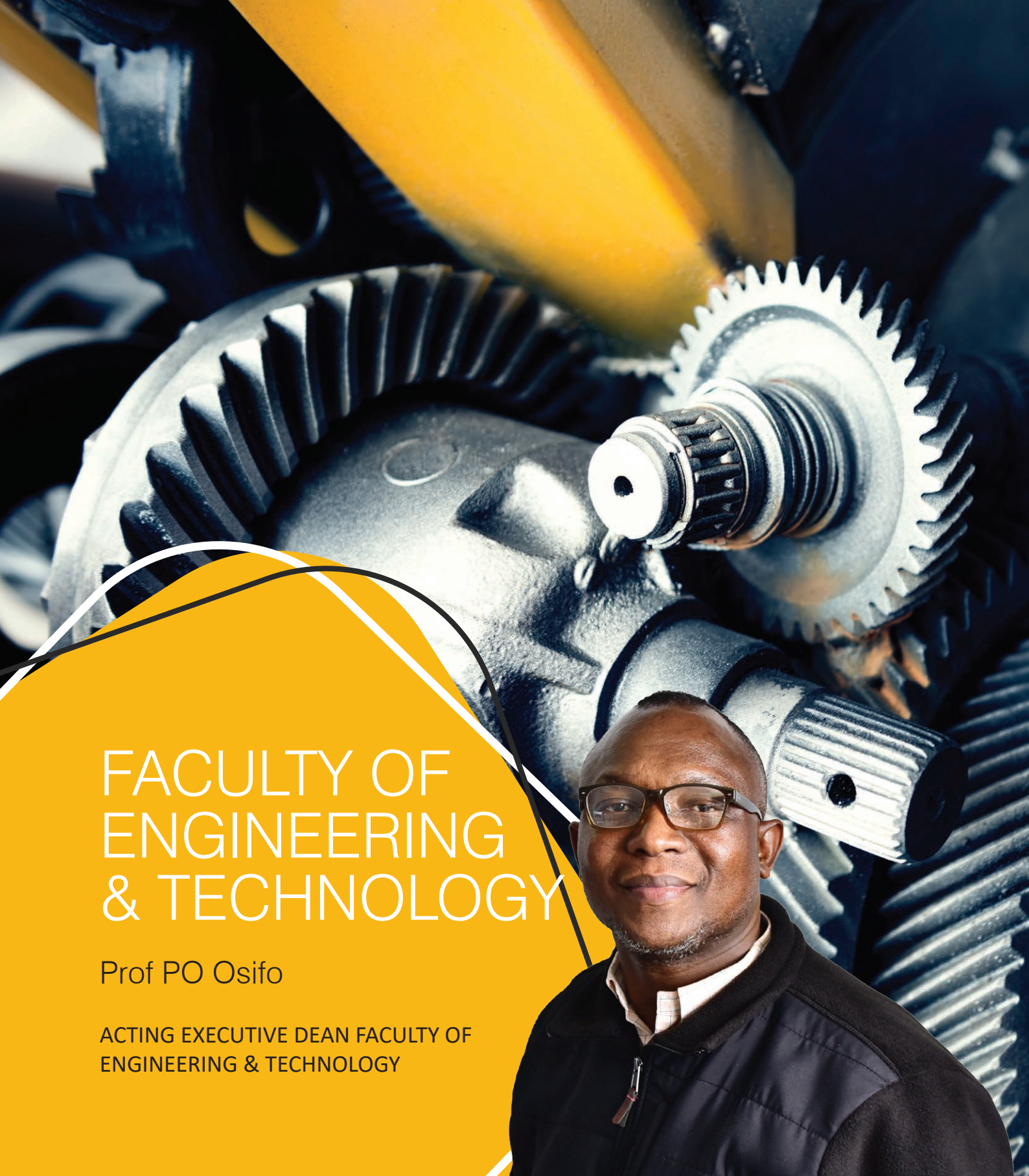
Researchers: Xaba, T. & Nindi, M.M.
Title of research: Synthesis of silver and copper sulfide nanoparticles and the preparation of nigella sativa seed-based nanocomposites for the removal of lead ions in wastewater
Higher Education Institution: University of South Africa

Researchers: Xaba, T. & Maxhakato, W.
Title of research: Synthesis of zinc and lead sulfide nanoparticles and the preparation of nanocomposites for the removal of methylene blue and iron (II) ions in wastewater
Higher Education Institution: University of Johannesburg

Researchers: Xaba, T. & Maubane-Nkadimeng, M.S.
Title of research: Heteroatom doped carbon nanomaterials as electrocatalysts for oxygen reduction reactions
Higher Education Institution: University of Witwatersrand
Research Partnerships with International Universities /Collaboration

Researchers: Xaba, T. & Alshakban, M.
Title of research: Preparation of metal sulfide thin films for solar cell application
Higher Education Institution: University of Misan, Iraq



A close-up photograph of a mechanical gear system. A large, dark metal gear is in the foreground, with a yellow shaft passing through it. Another gear is visible in the background. A man with glasses and a dark jacket is in the foreground, looking towards the camera. The background is a blurred mechanical assembly.

FACULTY OF ENGINEERING & TECHNOLOGY

Prof PO Osifo

ACTING EXECUTIVE DEAN FACULTY OF
ENGINEERING & TECHNOLOGY

MESSAGE FROM THE ACTING EXECUTIVE DEAN

The Faculty of Engineering and Technology has realigned its research-focused areas to those that can effectively assist in addressing national and global issues, some underpinned in the national and global goals agenda such as National Vision 2030 and the UN-SDGs. The Faculty has four sets of Research Areas aligned to the University's (VUT) Strategic Objectives; these Research Areas produce most of the outputs. The areas include water, energy, sustainable beneficiation and manufacturing technology, from which other focus areas emanate.

They include research on solar systems, solar storage, biodiesel, energy conversion, carbon capture, water-sensitive settlement design, wastewater treatment, rapid prototype, lean manufacturing, environmental pollution control, solid waste management, circular economy, metal additive manufacturing (titanium alloys implants), and polymer additive manufacturing (3D printing).

In our conversation with others, it is helpful to note that the foundation of academic development relies on Research which forms the bedrock of academic achievement. The Faculty has recalibrated itself with solid teaching and learning foundation knowledge that articulates to produce cutting-edge research and innovation that is socially relevant, commercially viable, and environmentally responsible. Knowing this, the Faculty of Engineering and Technology has used this thinking to strategically push Research to form a more significant part of the Faculty academic development anchored to the University's Strategic Plan.

Further, the Faculty has in past years, focused on capacity development among the academic staff to be able to achieve the planned Research Key Performance values and, it is interesting to know that one or two members from each of the departments are now involved with the activity under the Research Focus Areas. However, the Faculty Research Outputs were affected by the Covid-19 scenario with a slight drop in the number of journal publications between 2021 and 2022, the Faculty achieved 134 units in 2021 compared to 124 units in 2022. On the other hand, the Faculty was able to cap a lot of success to itself with the outcome in the increase in the number of students and staff completing their PG studies, and also in the increase in the number of promoted academic staff, at this same period of 2022, in which five and three academic staff received promotions to full professors and associate professors, respectively.

To improve innovation and commercialisation, the Faculty has refocused its research interest to address the most challenging issues in the world today, as mentioned above, such as unprecedented energy challenges, water resources, pollution

control and digital information technology. As these complex issues remained focused in our minds, it has enabled the Faculty Research relationships with NRF and WRC to grow over these years, with the majority of the research engagement being in the areas of renewable energy (bioenergy) production, solid waste management, wastewater treatment and reuse, and air pollution control.

Four of the staff members in the Faculty are NRF-rated researchers of different categories, and they are intensely involved in these areas of Faculty interest.

Of importance, is the R1.5 million Research Project received from WRC, which is still ongoing in one of our Key Focus Areas, to produce bioenergy from food waste which is being handled by one out of the four postdocs approved for the Faculty in 2022.

Kindly note that research in these areas included part of the drive to meet the Institutional Strategic Research Objectives, the National Vision and global goals. Therefore, the Faculty has aligned its priorities to the demands/needs of future challenges. The digital Technology, which addresses the 4IR skills shortage, is already anchored in some of the Research Projects in the Faculty.

Furthermore, to support the Faculty Research endeavour, the Faculty has developed a Master's degree in Engineering in Energy Efficiency, in which more than 18 students registered in 2022. There is also an ongoing development for the Master's in Engineering Management and Instruction, which was approved at Senate and may start offering in 2023.

The Faculty has re-emerged from the disruption of Covid-19 pandemic that almost ravaged societal activities, especially the effect on the University Research Plan 2022. The Faculty was still able to maintain its pursuit to enhance its community engagement through several implementation of community projects within and outside the Vaal region.

In addition, the Faculty was able to continue its engagement in a more substantial term through collaboration with industries, institutions and research organisations. These include other industries such as SASOL, Eskom, Telkom, CHIETA, NRF, WRC, CSIR, and PEESA. These collaborations have pushed the Research capacity to a higher level of achievement within the Institution.

Prof PO Osifa

ACTING EXECUTIVE DEAN FACULTY OF ENGINEERING & TECHNOLOGY



Postgraduate Staff Qualifications Completed in 2022

Name: Jabu, M. A.

Qualification: MEng

Dissertation/Thesis Title: An investigation of the damping response and structural strength of a fibreglass and rubber particles composite sleeper

University/Institution: Vaal University of Technology

Name: Godwright, M. T.

Qualification: MEng

Dissertation/Thesis Title: Modification of ceramic membrane surface nanoparticle coating for improved wettability during oil-water separation

University/Institution: Vaal University of Technology

Name: Nathan, N. M.

Qualification: MEng

Dissertation/Thesis Title: Optimal strength of carbon fibre overwrapped composite high-pressure vessels

University/Institution: Vaal University of Technology

Name: Herbert, Y. H. K.

Qualification: MEng

Dissertation/Thesis Title: Effect of fault and transmission error on spur gear meshing stiffness by vibration and time-frequency techniques

University/Institution: Vaal University of Technology

Name: Zinti, N. N.

Qualification: DEng

Dissertation/Thesis Title: Optimisation of a waste polyethylene terephthalate/fly ash hybrid concrete composite in slabs

University/Institution: Vaal University of Technology

Name: Wachuli, W. W.

Qualification: DEng

Dissertation/Thesis Title: Formulation of nano cellulosic fibres and particulate fillers and their mono and hybrid reinforced polymer composites

University/Institution: Vaal University of Technology

Name: Benson, M. J. M.

Qualification: MTech

Dissertation/Thesis Title: Design and development of a multi-protocol supervisory control and data acquisition device for use in renewable energy systems

University/Institution: Vaal University of Technology

Conferences (Papers and posters presented)

Presenter and co-presenter: Mahiya, A. K., Prof Seodigeng, T., Dr Tshilenge, J. K. & Dr Joubert, A.

Title of Paper: Modelling of alkaline electrolyser for hydrogen production using simulink and artificial neural networks (ANN) for output prediction

Conference: 12th Renewable Energy Postgraduate Symposium

Place: Pretoria, South Africa

Date: 31 October - 01 November 2022

ISBN/ISSN: N/A

Presenter and co-presenter: Sozinando, D.F., Netshitandani, V., Kouejou, X.T. & Alugongo, A.A.

Title of Paper: Flow balance and pressure drop of pumping station system during routine maintenance activities

Conference: 2022 IEEE 13th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT) 2022 May 25 (pp. 230-235).

Place: Cape Town, South Africa

Date: 25 - 27 May 2022

ISBN/ISSN: 978-1-6654-8401-5

Presenter and co-presenter: Kemajou, H.Y.H., Kouejou, B.X.T. & Alugongo, A.A.

Title of Paper: Experimental study of the influence of pitting and crack coexistence in spur gear system (Part II)

Conference: 2022 IEEE 13th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT) 2022 May 25 (pp. 146-151).

Place: Cape Town, South Africa

Date: 25 - 27 May 2022

ISBN/ISSN: 978-1-6654-8401-5

Presenter and co-presenter: Kemajou, H.Y.H., Kouejou, B.X.T. & Alugongo, A.A.

Title of Paper: Pitting and crack coexistence in a model-based gear dynamic system (Part I)

Conference: 2022 IEEE 13th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT) 2022 May 25 (pp. 230-235).

Place: Cape Town, South Africa

Date: 25 - 27 May 2022

ISBN/ISSN: 978-1-6654-8401-5

Presenter and co-presenter: Duvenage, E., Dr Sutherland, G. & Dr Joubert, A.

Title of Paper: Thermal and stored heat energy for the generation of power

Conference: 12th Renewable Energy Postgraduate Symposium

Place: Pretoria, South Africa

Date: 31 October - 1 November 2022

ISBN/ISSN: N/A

Presenter and co-presenter: Matlatle, L., Seodigeng, T. & Dr Sutherland, G.
Title of Paper: Evaluation of operating parameters to improve the efficiency of a proton exchange membrane fuel cell
Conference: 12th Renewable Energy Postgraduate Symposium
Place: Pretoria, South Africa
Date: 31 October - 1 November 2022
ISBN/ISSN: N/A

Presenter and co-presenter: Zungu, N. & Osifo, P.O.
Title of Paper: Development and hydrogen fuel cell performance of sulfonated chitosan membranes modified with 2-aminoethanesulfonic acid
Conference: 12th Renewable Energy Postgraduate Symposium
Place: George, South Africa
Date: 28 - 30 August 2022
ISBN/ISSN: 978-0-6397-2773-8

Presenter and co-presenter: Dr Moloi, K. & Dr. Langa, H.M.
Title of Paper: Towards determining the optimal application of the distributed generation for grid integration
Conference: ISCOMI 2022: 2022 9th Intl. Conference on Soft Computing & Machine Intelligence
Place: Toronto, Canada
Date: 26 - 27 November 2022
ISBN/ISSN: N/A

Publications (Journals)

Author and co-authors: Nkomo, N.Z., Masu, L.M. & Nziu, P.K.
Title: Optimisation of mechanical properties of polyethylene terephthalate fibre/fly ash hybrid concrete composite
Journal: Case Studies in Construction Materials
Volume: 17
Issue: N/A
Page numbers of article: 1-18
ISSN: <https://doi.org/10.1016/j.cscm.2022.e01395>

Author and co-authors: Nkomo, N.Z., Masu, L.M. & Nziu, P.K.
Title: Effects of polyethylene terephthalate fibre reinforcement on mechanical properties of concrete
Journal: Advances in Material Science and Engineering
Volume: 2022
Issue: Article ID 4899298
Page numbers of article: 1-9
ISSN: <https://doi.org/10.1155/2022/4899298>

Author and co-authors: Nkomo, N.Z., Masu, L.M. & Nziu, P.K.
Title: Effects of polyethylene terephthalate fibre and fly ash on mechanical properties of concrete
Journal: Materials Research Express
Volume: 9

Issue: 5
Page numbers of article: 1-14
ISSN: <https://doi.org/10.1088/2053-1591/ac703d>

Research in Progress

Researcher: Maloka, T.V.
Title: Thermal management of photo-voltaic panels using a phase change material for the improvement of conversion efficiency in the Vaal region of South Africa
Field: Electrical Engineering

Researcher: Ramapulane, S.
Title: Modeling an energy efficient power plant to increase the national grid capacity
Field: Electrical Engineering

Researcher: Ramolefo, E.
Title: Optimisation of energy usage of offices in an office block using a machine language model
Field: Electrical Engineering

Researcher: Duvenage, E.E.
Title: Thermal and stored heat energy to drive a stirling engine for the generation of power
Field: Electrical Engineering

Researcher: Makgai, L.M.
Title: Modelling of transmission lines abnormalities using machine learning methods
Field: Electrical Engineering

Researcher: Morwamotshe, P.
Title: Impact of wind generation on overcurrent coordination in 11 kV radial feeder
Field: Electrical Engineering

Researcher: Matlatle, J.
Title: Optimisation of a fuel cell monitoring system to improve fuel cell efficiency
Field: Electrical Engineering

Researcher: Nkawambe, M.
Title: Energy storage through a regenerative hydrogen fuel cell in a hybrid system of renewable energy for power generation
Field: Electrical Engineering

Researcher: Sebekedi, T.
Title: Design of an efficient energy bank to provide electricity during load shedding
Field: Electrical Engineering

Researcher: Motale, L.

Title: Developing household smart microgrid for energy efficiency in South Africa

Field: Electrical Engineering

Researcher: Mabila, P.

Title: Energy security management of renewable energy availability based on weather conditions

Field: Electrical Engineering

Researcher: Moletsane, F.

Title: The design of a power converter for a proton exchange membrane fuel cell

Field: Electrical Engineering

Researcher: Maleka, K.A.

Title: Design and techno-economic analysis of a grid-connected distributed hybrid plant

Field: Electrical Engineering

Researcher: Mahlangu, Z.E.

Title: Monitoring and finding a solution for the effect of potential induced degradation on photo-voltaic systems

Field: Electrical Engineering

Researcher: Oberholzer, L.J.

Title: Developing a process, analysis, and resolution framework for an electricity dispute

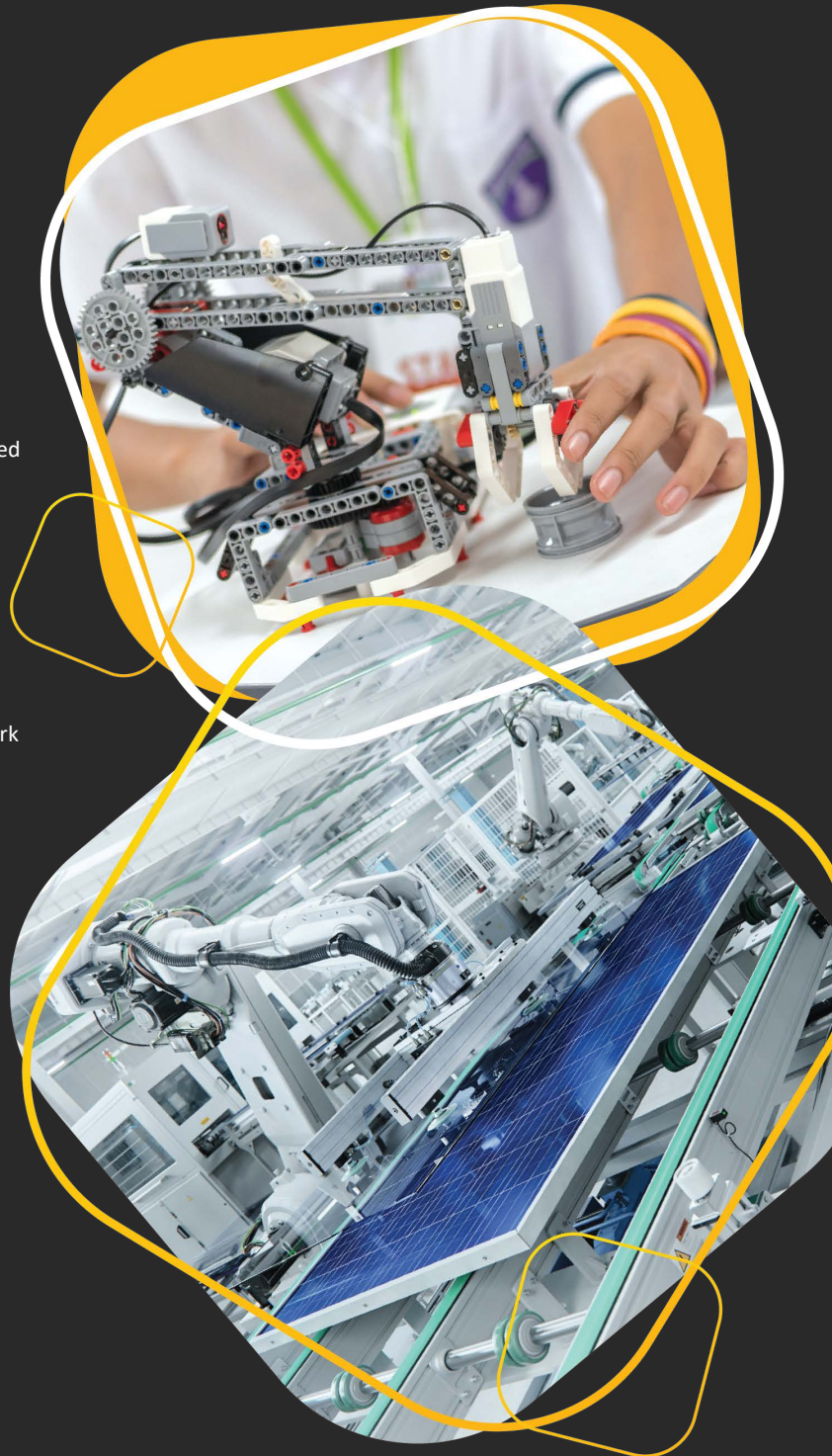
Field: Electrical Engineering

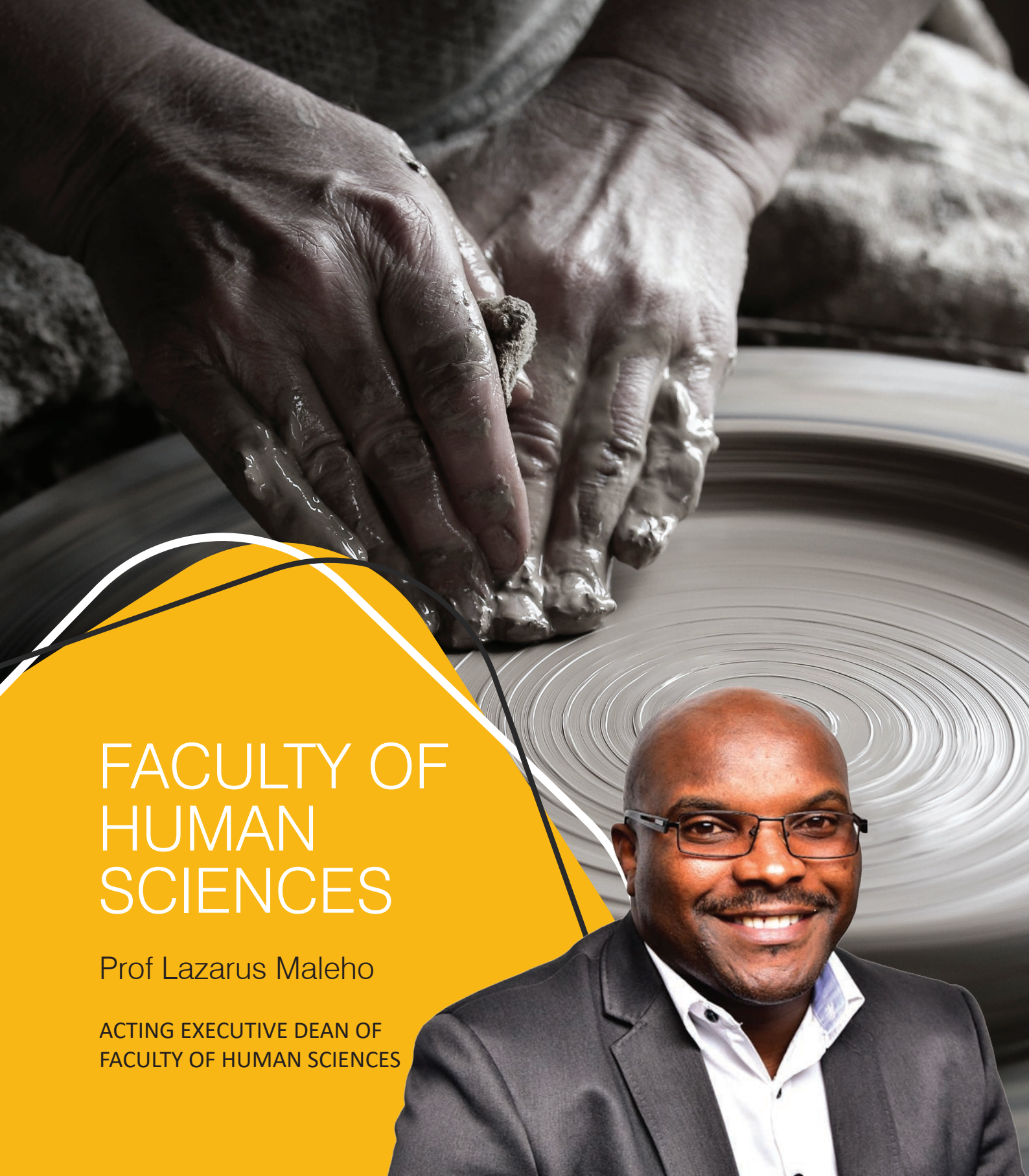
Research Partnerships with Industry or Community Groups

Researchers: Dr Sutherland, G.

Title of research: Vaal River City and Aerotropolis

Industry: VEZ, Vaal University of Technology & North-West University





FACULTY OF HUMAN SCIENCES

Prof Lazarus Maleho

ACTING EXECUTIVE DEAN OF
FACULTY OF HUMAN SCIENCES

MESSAGE FROM THE ACTING EXECUTIVE DEAN

The Faculty of Human Sciences yielded the most Research Outputs ever during the 2022 academic year. Boasting multi-disciplinarity, the Research Outputs conceptualised in diverse disciplines ranged from tourism and integrated communication, legal studies, and visual arts to STEM education. The Research Outputs contributed to knowledge creation and dissemination.

This knowledge will benefit the Institution, industry, government and society and fundamentally contribute to new ways of conceptualising how we teach and assess students in our classrooms. Notably, the Research done by Faculty advise government and thus influence public policy. The nexus between research and teaching helps staff to continually reflect on finding new ways and applications of new knowledge to improve throughput and student success rates.

A vibrant atmosphere of scholarship and innovative thinking fuels the desire to become knowledge workers, educated and equipped with high-level skills to meet the challenges of the 21st century. We place central importance on Faculty Research so that we can become experts on the matters we research and share insights with our students.

Cross-disciplinary learning from members who are deeply and intellectually involved accentuates the desire to excel as researchers at different levels within the Faculty. This excitement urges Faculty to search for new ideas to enhance research continually. Through individual researchers and research collaborations, we have created a Faculty that is growing in productivity and is a genuinely exciting place to be.

Academic research is an integral part of global development. The demand for a responsive curriculum that produces competent graduates, leading entrepreneurs and leading innovators has seen the Faculty aligning its Research response to various national, regional, and international agendas such as the National Development Plan 2030, Agenda 2030 on Sustainable Development and Agenda 2063 also dubbed Africa We Want. This has resulted in a steady growth of Research Outputs within the Faculty across its four departments over the years.

Research output in the Faculty of Human Sciences will continue to grow subsequently, with a year-on-year increase in line with our strategic direction. The Faculty's future position looks solid, with many staff having Master's and PhD qualifications. This Faculty expect investment in postgraduate recruitment and supervision to boost future Research Outputs.

As the Faculty grows, hosting Post-Doctoral and other research fellows can leverage and catapult Faculty research positions to greater heights. All staff members and students who put in the time and contributed to the Faculty Research Outputs under challenging circumstances are humbling for the Faculty. The Faculty of Human Sciences will continue to grow with a year-on-year increase in line with our strategic direction. An emerging, vibrant Research culture, a new season for scholarship growth!

Prof Lazarus Malche

ACTING EXECUTIVE DEAN OF
FACULTY OF HUMAN SCIENCES



Postgraduate Staff Qualifications Completed in 2022

Name: Alatise, M. B.

Qualification: PhD (Eng)

Dissertation/Thesis Title: Pose estimation and data fusion algorithms for an autonomous mobile robot based on vision and IMU in an indoor environment

University / Institution: University of Pretoria

Name: Baloyi, P.

Qualification: MEng (Mech)

Dissertation Title: Reinforcement of mild steel –AISI 1008-MIG welds using titanium powder

University: University of Johannesburg

Name: Matsaung, D.

Qualification: MA (Public Relations Management)

Dissertation Title: Evaluating the value of corporates social investment as an image enhancer at a public broadcasting company

University: Vaal University of Technology

Conferences (Papers and posters presented)

Presenter and co-presenter: Baloyi, M. E. & Lebelo, R. S.

Title of Paper: Subsequent call of decolonisation at one university in South Africa

Conference: International Cappadocia Scientific Research Congress

Place: Cappadocia-Nevsehir, Turkey

Date: 15-17 December 2022

ISBN/ISSN: 978-625-8423-62-4

Presenter and co-presenter: Barros, W. & Lebelo, R. S.

Title of Paper: Content analysis study: examining the factors of effective teaching strategies: case of Vaal University of Technology

Conference: International Halich Congress on Multidisciplinary Scientific Research

Place: Istanbul, Turkey

Date: 15-16 August 2022

ISBN/ISSN: 978-625-7464-04-8

Presenter and co-presenter: Chmela-Jones, K. & Maharajh, R.

Title of Paper: Blending graphic design: pedagogical approaches

Conference: Design Principles and Practices

Place: University of Monterrey, Mexico

Date: 03 March 2022

ISBN/ISSN: N/A

Presenter: Doman, J. A.

Title of Paper: 4IR, the photographic curriculum and the South African higher educational context: a case study

Conference: Design Education Forum of Southern Africa (DEFSA)

Place: Online

Date: 05-07 October 2022

ISBN/ISSN: 978-0-620-97912-2

Presenter: Lebelo, R. S.

Title of Paper: Temperature Distribution Analysis Using Linear Lines Method

Conference: International Marmara Scientific Research and Innovation Congress

Place: Istanbul, Turkey

Date: 21-22 August 2022

ISBN/ISSN: 978-625-7562-70-6

Presenter and co-presenter: Lebelo, R. S. & Akindeinde, S. O.

Title of Paper: Approximating temperature distribution in a medium of constant thermal conductivity using step functions

Conference: Cukurova 7th International Scientific Researches Conference

Place: Adana, Turkey

Date: 07-08 September 2022

ISBN/ISSN: 978-625-7464-17-8



Presenter and co-presenter: Mahlobo, R. K. & Lebelo, R. S.
Title of Paper: Impact of mathematics centre intervention at a South African university of technology
Conference: 6th International STEM in Education Conference (STEM 2021).
Place: Vancouver, Canada
Date: 05-09 July 2022
ISBN/ISSN: 978-0-88865-476-2

Presenter and co-presenter: Makwela, M. J. & Olalere, F. E.
Title of Paper: Preparing the future workforce in African universities of technology: a case of new media art as a mutating discipline in the 4IR
Conference: Design Education Forum of Southern Africa (DEFSA)
Place: Online
Date: 05-07 October 2022
ISBN/ISSN: 978-0-620-97912-2

Presenter: Maharajh, R.
Title of Paper: Death of Srinagar - 'resilience through self-journey'
Conference: Virtual Hugs Post Graduate Conference
Place: WITS University:
Date: 19-21 October 2022
ISBN/ISSN: N/A

Presenter and co-presenter: Nieman, C. M. & Lenz, R.
Title of Paper: The linguistic and social-linguistic barriers and experiences of African francophone students at a university of technology
Conference: Social Sciences International Research Conference
Place: Online, South Africa
Date: 13-15 October 2022
ISBN/ISSN: 978-0-620-96741-9

Presenter and co-presenters: Thwala, N. I. C., Motolla, L. S., Lebelo, R. S., Khumalo, S. & Mabunda, M. R.
Title of Paper: How close relationships in higher education impact students' lives: friendships and romantic relationships.
Conference: International Congress on Social Sciences, China to Adriatic
Place: Ankara, Turkey
Date: 07-09 August 2022
ISBN/ISSN: 978-605-70611-3-3

Presenter: Van Der Bank, M.
Title of Paper: The regulation of light pollution in South Africa: a South African law approach
Conference: International Research Conference
Place: Riga, Latvia
Date: 17-18 June 2022
ISBN/ISSN: 1307-6892

Presenter: Van Der Bank, M.
Title of Paper: The statutory framework applicable to local governments in South African to promote sustainable tourism
Conference: Global Business and Technology Association Reconstructing Global Markets: Challenges, Policies, and Strategies
Place: Online
Date: 14-16 July 2022
ISBN/ISSN: 2471-6006

Presenter and co-presenter: Van der Bank, C. M. & Van Der Bank, M.
Title of Paper: The legality of "lockdown regulations" during the Covid-19 pandemic: are they fair and justifiable?
Conference: 14th Annual Conference of the EuroMed Academy of Business: Contemporary Business Concepts and Strategies in the new Era
Place: Online
Date: 22-24 September 2022
ISBN/ISSN: 2547-8516

Seminars/Workshops Presented

Title: 4IR, the photographic curriculum and the South African higher educational context: a case study
Presented to: Human Sciences Faculty Research Seminar
Place: Online, Vanderbijlpark, South Africa
Date: 20 August 2022

Title: Redirecting communication from anthropomorphic responses to intended messages in PSA's involving animals: An experiment with the *verfremdungseffekt*
Presented to: Human Sciences Faculty Research Seminar
Place: Online, Vanderbijlpark, South Africa
Date: 20 August 2022

Title: Feat or futile? Students' perceptions of group work at a university of technology
Presented to: Human Sciences Faculty Research Seminar
Place: Online, Vanderbijlpark, South Africa
Date: 20 August 2022

Title: Preparing the future workforce in African universities of technology: a case of new media art as a mutating discipline in the 4IR
Presented to: Human Sciences Faculty Research Seminar
Place: Online, Vanderbijlpark, South Africa
Date: 20 August 2022

Title: Reclaiming liberation struggle memories in a post-apartheid South Africa in the Sedibeng district municipality through short animated films

Presented to: Human Sciences Faculty Research Seminar

Place: Online, Vanderbijlpark, South Africa

Date: 20 August 2022

Title: Understanding the concept of home gardens in rural areas communities in South Africa to promote sustainability and resilience post Covid-19: a desk review.

Presented to: Human Sciences Faculty Research Seminar

Place: Online, Vanderbijlpark, South Africa

Date: 20 August 2022



Title: Keeping parks and open spaces in Emfuleni municipal area accessible for physical and mental health during Covid-19

Presented to: Human Sciences Faculty Research Seminar

Place: Online, Vanderbijlpark, South Africa

Date: 20 August 2022

Title: Exploring the need for fashion drawing skills training amongst unqualified fashion entrepreneurs in the Emfuleni local municipality.

Presented to: Human Sciences Faculty Research Seminar

Place: Online, Vanderbijlpark, South Africa

Date: 20 August 2022

Publications (Books/Chapters in Books)

Author and co-authors: Chikodzi, D., Dube, K. & Nhamo, G.

Chapter: Summary of Findings, Conclusions and Policy Recommendations

Title: Sustainable development goals for society volume 2 food security, energy, climate action and biodiversity

Publisher: Springer

Date: 2022

Page numbers of chapter: 287-300

ISBN: 978-3-030-70952-5

Author: Dube, K.

Chapter: Climate Action at International Airports: An Analysis of the Airport Carbon Accreditation Programme

Title: Sustainable development goals for society volume 2 food security, energy, climate action and biodiversity

Publisher: Springer

Date: 2022

Page numbers of chapter: 237-251

ISBN: 978-3-030-70952-5

Author: Dube, K.

Chapter: Tropical Cyclones as an Emerging Global Disaster Risk and Management Issue

Title: Cyclones in Southern Africa volume 2: foundational and fundamental topics

Publisher: Springer

Date: 2022

Page numbers of chapter: 03-18

ISBN: 978-3-030-74262-14

Author: Dube, K.

Chapter: Meteorological and climatic aspects of Cyclone Idai and Kenneth

Title: Cyclones in Southern Africa volume 2: foundational and fundamental topics

Publisher: Springer

Date: 2022

Page numbers of chapter: 19-36

ISBN: 978-3-030-74262-14

Author: Dube, K.

Chapter: Concluding remarks: De-risking Tropical Cyclones in the Era of Climate change emergency

Title: Cyclones in Southern Africa volume 2: foundational and fundamental topics
Publisher: Springer
Date: 2022
Page numbers of chapter: 261-270
ISBN: 978-3-030-74262-14

Author: Dube, K.
Chapter: A Reflection of Hydrological and Other Emerging Perspectives Of Lake Kariba's Operation Noah
Title: The increasing risk of floods and tornadoes in Southern Africa
Publisher: Springer
Date: 2022
Page numbers of chapter: 63-79
ISBN: 978-3-030-74192-1

Author: Dube, K.
Chapter: Victoria Falls Water Flow Regimes: A Tale of Two Half Centuries
Title: The increasing risk of floods and tornadoes in Southern Africa
Publisher: Springer
Date: 2022
Page numbers of chapter: 81-102
ISBN: 978-3-030-74192-1

Author: Dube, K.
Chapter: Rethinking Harbours, Beaches and Urban Estuaries Waste Management Under Climate-Induced Floods in South Africa
Title: The increasing risk of floods and tornadoes in Southern Africa
Publisher: Springer
Date: 2022
Page numbers of chapter: 127-140
ISBN: 978-3-030-74192-1

Author: Dube, K.
Chapter: Characterisation and Impacts of Tornado-Induced Flooding and Windstorms in Mpumalanga Province, South Africa
Title: The increasing risk of floods and tornadoes in Southern Africa
Publisher: Springer
Date: 2022
Page numbers of chapter: 257-269
ISBN: 978-3-030-74192-1

Author: Dube, K.
Chapter: Impact of Tropical Cyclone Idai On Tourism Attractions and Related Infrastructure in Chimanimani, Zimbabwe



Title: Cyclones in Southern Africa volume 3: implications for the sustainable development goals
Publisher: Springer
Date: 2022
Page numbers of chapter: 245-264
ISBN: 978-3-030-74303-1

Author and co-author: Dube, K. & Nhamo, G.
Chapter: Private Sector Sustainable Development Goals' Localisation: Case of Kruger Mpumalanga International Airport, South Africa
Title: Sustainable development goals for society volume 2 food security, energy, climate action and biodiversity
Publisher: Springer
Date: 2021
Page numbers of chapter: 177-189
ISBN: 978-3-030-70952-5

Author and co-authors: Dube, K., Chikodzi, D. & Nhamo, G.
Chapter: Making SDGs Work to End Hunger, Sustain Energy, Resolve Climate Change, and Reverse Biodiversity Loss
Title: Sustainable development goals for society volume 2 food security, energy, climate action and biodiversity
Publisher: Springer
Date: 2022
Page numbers of chapter: 03-15
ISBN: 978-3-030-70952-5

Author and co-authors: Dube, K., Nhamo, G. & Togo, M.
Chapter: Conclusion and Recommendations: Challenges and Opportunities in SDG's Localisation and Implementation
Title: Sustainable development goals for society volume 1 selected topics of global relevance
Publisher: Springer
Date: 2022
Page numbers of chapter: 277-289
ISBN: 978-3-030-70948-8

Author: Lebelo, R. S.
Chapter: Recent Study on Heat Transfer Analysis for a Sphere of Combustible Material of Variable Thermal Conductivity
Title: Advanced aspects of engineering research volume 3
Publisher: Book Publisher International
Date: 2022
Page numbers of chapter: 81-91
ISBN: 978-93-90768-20-2

Author and co-author: Lebelo, R. S. & Makinde, O. D.
Chapter: Two-Step Exothermic Chemical Reaction for Heat Transfer Investigation in a Convective Cylinder
Title: Mechanisms and machine science
Publisher: Springer Science and Business Media
Date: 2022
Page numbers of chapter: 49-58
ISBN: 978-3-030-68303-0

Author and co-authors: Nhamo, G., Togo, M. & Dube, K.
Chapter: Making Sustainable Development Goals Relevant for, in and with Societies
Title: Sustainable development goals for society volume 1 selected topics of global relevance
Publisher: Springer
Date: 2022
Page numbers of chapter: 03-15
ISBN: 978-3-030-70948-8
Publications (Journals)

Author and co-authors: Adeosun, A. T., Gbadeyan, J. A. & Lebelo, R. S.
Title: Heat transport of casson nanofluid flow over a melting riga plate embedded in a porous medium
Journal: International Journal of Engineering Research in Africa
Volume: 55
Issue: 2021
Page numbers of article: 15-27
ISSN: 663-4144

Author and co-authors: Adewumi, A. O., Akindeinde, S. O. & Lebelo, R. S.
Title: Sumudu lagrange-spectral methods for solving system of

linear and nonlinear volterra integro-differential equations
Journal: Applied Numerical Mathematics
Volume: 169
Issue: 2021
Page numbers of article: 146-163
ISSN: 0168-9274

Author and co-authors: Akindeinde, S. O., Adewumi, O. A. & Lebelo, R. S.
Title: Approximate analytical solution of a power-law pseudoplastic fluid in a boundary layer over a porous plate: a new application of multi-stage Parker-Sochacki method
Journal: International Journal of Engineering Research in Africa
Volume: 55
Issue: 2021
Page numbers of article: 1-14
ISSN: 663-4144

Author and co-authors: Booysen, E., Dicks, E. G. & Oosthuizen, D.
Title: Tap use and hand washing activities of kitchen staff in restaurants within Gauteng, South Africa



Journal: African Journal of Hospitality, Tourism and Leisure.
Volume: 10
Issue: 4
Page numbers of article: 1229-1240
ISSN: 2223-814X

Author and co-authors: Dhunpath, R., Biggs, L., Dippenaar, H., Friedrich-Nel, H., Joubert, D., Nell, I. & Yeats, J.
Title: Unveiling the professional attributes of university teachers
Journal: Critical Studies in Teaching and learning CrISaL
Volume: 9
Issue: Special Issue 30 September 2022
Page numbers of article: 126-144
ISSN: 2310-7103

Author: Dube, K.
Title: Greenhouse gas emissions and sustainability in Victoria Falls: focus on hotels, tour operators and related attractions
Journal: African Geographical Review
Volume: 40
Issue: 2
Page numbers of article: 125-140
ISSN: 19376812

Author: Dube, K.
Title: Sustainable development goals localisation in the tourism sector: lessons from Grootbos private nature reserve, South Africa
Journal: GeoJournal
Volume: 86
Issue: 2
Page numbers of article: 2191-2208
ISSN: 1572-9893

Author: Dube, K.
Title: Implications of Covid-19 induced lockdown on the South African tourism industry and prospects for recovery
Journal: African Journal of Hospitality, Tourism and Leisure
Volume: 10
Issue: 1
Page numbers of article: 270-287
ISSN: 2223-814X

Author: Dube, K.
Title: Sustainable development goals localisation in the hospitality sector in Botswana and Zimbabwe
Journal: Sustainability
Volume: 13
Issue: 15
Page numbers of article: 1-15
ISSN: 2071-1050

Author and co-authors: Dube, K., Nhamo, G. & Chikodzi, D.
Title: Rising sea level and its implications on coastal tourism development in Cape Town, South Africa
Journal: Journal of Outdoor Recreation and Tourism
Volume: 33
Issue: March 2021
Page numbers of article: 1-13
ISSN: 2213-0780

Author and co-authors: Dube, K., Nhamo, G. & Chikodzi, D.
Title: Covid-19 pandemic and prospects for recovery of the global aviation industry
Journal: Journal of Air Transport Management
Volume: 92
Issue: May 2021
Page numbers of article: 1-12
ISSN: 0969-6997



Author and co-authors: Dube, K., Nhamo, G. & Chikodzi, D.
Title: Flooding trends and their impacts on coastal communities of Western Cape province, South Africa
Journal: GeoJournal
Volume: 87
Issue: 4

Page numbers of article: 453-468
ISSN: 1572-9893

Author: Egal, A. A.
Title: Smallholder farmers need nutrition education? a case study from KwaZulu Natal, South Africa
Journal: Journal of International Agricultural and Extension Education
Volume: 28
Issue: 3
Page numbers of article: 14-27
ISSN: 2756-3642



Author and co-authors: Nana, N., Van Staden, J. & Coetzee, N.
Title: Business skills development for a successful fashion business in peri-urban communities, South Africa
Journal: The Southern African Journal of Entrepreneurship and Small Business Management
Volume: 13
Issue: 1

Page numbers of article: 401-413
ISSN: 2071-3185

Author and co-authors: Lebelo, R., Adeosun, A. T., Gbadeyan, J. A. & Akindeinde, S. O.
Title: On heat transfer stability for a convective reactive material of variable thermal conductivity in a sphere
Journal: Gorteria
Volume: 34
Issue: 11
Page numbers of article: 62-74
ISSN: 0017-2294

Author and co-author: Lebelo, R. & Moloi, K. C.
Title: Transient heat analysis in a two-step radiative combustible slab
Journal: Key Engineering Materials
Volume: 872
Issue: 1
Page numbers of article: 15-19
ISSN: 1662-9795

Author and co-authors: Lebelo, R., Waetzel, M., Mahlobo, R. K., Moloi, K. C. & Adesanya, S. O.
Title: On transient heat analysis of a two-step convective reactive cylinder
Journal: Journal of Physics: Conference Series
Volume: 1730
Issue: 1
Page numbers of article: 1-5
ISSN: 1742-6588

Author and co-authors: Lebelo, R., Mahlobo, K. R. & Adesanya, S.
Title: Investigating thermal stability in a two-step convective radiating cylindrical pipe
Journal: Defect and Diffusion Forum
Volume: 408
Issue: 1
Page numbers of article: 99-107
ISSN: 1662-9507

Author and co-authors: Lebelo, R., Moloi, K. C. & Chitumwa, C. C.
Title: Decolonising the postgraduate diploma in higher education curriculum at one university of technology in South Africa
Journal: South African Journal of Higher Education
Volume: 35
Issue: 1
Page numbers of article: 82-95
ISSN: 1753-5913

Author and co-authors: Lebelo, R., Adesanya, S. O., Akindeinde, S. O. & Mahlobo, R. K.

Title: Investigating oxygen depletion in a two-step combustible stockpile

Journal: Kamera

Volume: 49

Issue: 1

Page numbers of article: 2-10

ISSN: 0075-5222

Author: Maseko, T. W.

Title: The feasibility of the victims of corruption's claim for constitutional damages against public officials in South Africa

Journal: De Ure Law Journal

Volume: 54

Issue: 1

Page numbers of article: 127-140

ISSN: 2225-7160

Author: Madzimore, J.

Title: Describing a university as a site of ecology knowledge and high-performance culture in higher education

Journal: PONTE

Volume: 77

Issue: 12

Page numbers of article: 144-153

ISSN: 0032-423X

Author and co-authors: Maluleke, W., Motseki, M. M., Mokwena, R. J. & Dlamini, S.

Title: The *modus operandi* of perpetrators for credit card fraud in the Vaal region, South Africa

Journal: Cogent Social Sciences

Volume: 7

Issue: 1

Page numbers of article: 1-11

ISSN: 23311886

Author and co-authors: Moloi, K. C., Lebelo, R. S. & Zwane, V. I.

Title: Reconceptualising assessment strategies in the postgraduate diploma programme: a conflict perspective

Journal: Gorteria

Volume: 61

Issue: 4

Page numbers of article: 2-24

ISSN: 0017-2294

Author: Motseki, M. M.

Title: An exploration of human trafficking and human rights in South Africa: a strategic perspective

Journal: Gender & Behaviour



Volume: 19

Issue: 2

Page numbers of article: 17982-17905

ISSN: 1596-9231

Author and co-authors: Motseki, M. M., Maluleke, W. & Barkhuizen, J.

Title: Improving teaching and learning in higher education during the emergency of coronavirus disease-2019 pandemic: case studies from departments of criminology and criminal justice and legal science

Journal: European Journal of Economics, Law and Social Sciences

Volume: 5

Issue: 2

Page numbers of article: 319-345

ISSN: 2519-1284

Author and co-author: Mwadiwa, K. F. & Maleho, L. M.

Title: Digitilisation of corporate communication amidst the Covid-19 pandemic: case of a district municipality in Gauteng province

Journal: South African Association of Public Administration and Management (SAAPAM)

Volume: 57

Issue: 3

Page numbers of article:573-592
ISSN: 0036-0767

Author and co-author: Madzimure, J. & Ramnundlal, E.
Title: An investigation into business transformation during 4IR artificial intelligence and the impact on human resource practice in company A
Journal: Ponte
Volume: 77
Issue: 5
Page numbers of article: 14-32
ISSN: 0032-423X

Author and co-author: Madzimure, J. & Mathabatha, L.
Title: An exploratory study into the impact of work-integrated learning on built environment students work-readiness at council for the built environment, South Africa
Journal: Ponte
Volume: 77
Issue: 8
Page numbers of article: 41-65
ISSN: 0032-423X

Author and co-authors: Mabibibi, M. S., Dube, K. & Thwala, K.
Title: Successes and challenge in sustainable development goals localisation for host communities around Kruger National Park
Journal: Sustainability
Volume: 13
Issue: 1
Page numbers of article: 1-16
ISSN: 2071-1050

Author and co-authors: Morales, S. Egal, A.A. & Oldewage-Theron, W.
Title: Do smallholder farmers need nutrition education? a case study from KwaZulu Natal, South Africa
Journal: Journal of International Agricultural and Extension Education
Volume: 28
Issue: 4
Page numbers of article: 14-27
ISSN: 1077-0755

Author and co-author: Oldewage-Theron, W. & Egal, A. A.
Title: Is food insecurity a problem among the elderly in Sharpeville, South Africa?
Journal: Food Security
Volume: 13
Issue: 1
Page numbers of article: 71-81
ISSN: 1876-4517

Author and co-author: Pillay, A. M. & Madzimure, J.
Title: Democracy in decline: three global trends and how they highlight the case of “American exceptionalism” and the need to re-think IR theory
Journal: Eurasian Journal of Social Sciences
Volume: 9
Issue: 3
Page numbers of article: 138-149
ISSN: 2148-0214

Author and co-author: Pillay, A. M. & Madzimure, J.
Title: Symbols and ideological conflict: analysis of the global assaults on “symbols of colonialism” between May and September 2020
Journal: Ponte
Volume: 77
Issue: 6
Page numbers of article: 23-34
ISSN: 0032-423X

Author and co-author: Venter, D. & Erasmus, T.
Title: The impact of popular culture fandom on the quality of life of visitors to comic con Africa 2019
Journal: African Journal of Hospitality, Tourism and Leisure
Volume: 10
Issue: 10
Page numbers of article: 1064-1076
ISSN: 2223-814X

Author and co-authors: Ximba, M. M., Pillay, A. M. & Madzimure, J.
Title: An investigation into strategic management adjustments made by afrocentric group in preparation for the national health insurance (NHI) implementation in Gauteng province
Journal: International Journal of Sciences and Research
Volume: 77
Issue: 12/1
Page numbers of article: 96-125
ISSN: 0032-423X

Research in Progress

Researcher: Chmela-Jones, K. A.
Title: The position of human-centered graphic design in a post-humanist context
Field: PhD: Applied Design

Researcher: Cilliers, C. D.
Title: A critical assessment of marine wildlife voluntourism in Southern Africa
Field: PhD: Tourism Management



Researcher: Erasmus, V.

Title: Impact measurement of a nutrition education programme on knowledge retention and dietary intake behaviour on primary school children in Gauteng

Field: DTech: Food Service Management

Researcher: Erasmus, T.

Title: A comparison of place attachment as a cultural ecosystem service in South African national parks: an adaptive management strategy

Field: PhD: Environmental Management

Researcher: Makwela, M. J.

Title: Reclaiming liberation struggle memories in a post-apartheid South Africa in the Sedibeng district municipality through short animated films

Field: PhD: Visual Arts

Researcher: Maharajh, R.

Title: Seeming, being and becoming: an intimate rasa-led performance art exploration

Field: PhD: Visual Art

Researcher: Ngidi, K. M. N.

Title: Determining stakeholder's perceptions regarding World Heritage Sites : a case study in Vredefort Free State

Field: MTech: Tourism Management

Researcher: Radebe, M. L.

Title: Symbolism in sangoma cloth: a South African printmaking journey from the liminal to the liminoid

Field: MTech: Fine Art



Researcher: Thwala, K. C.

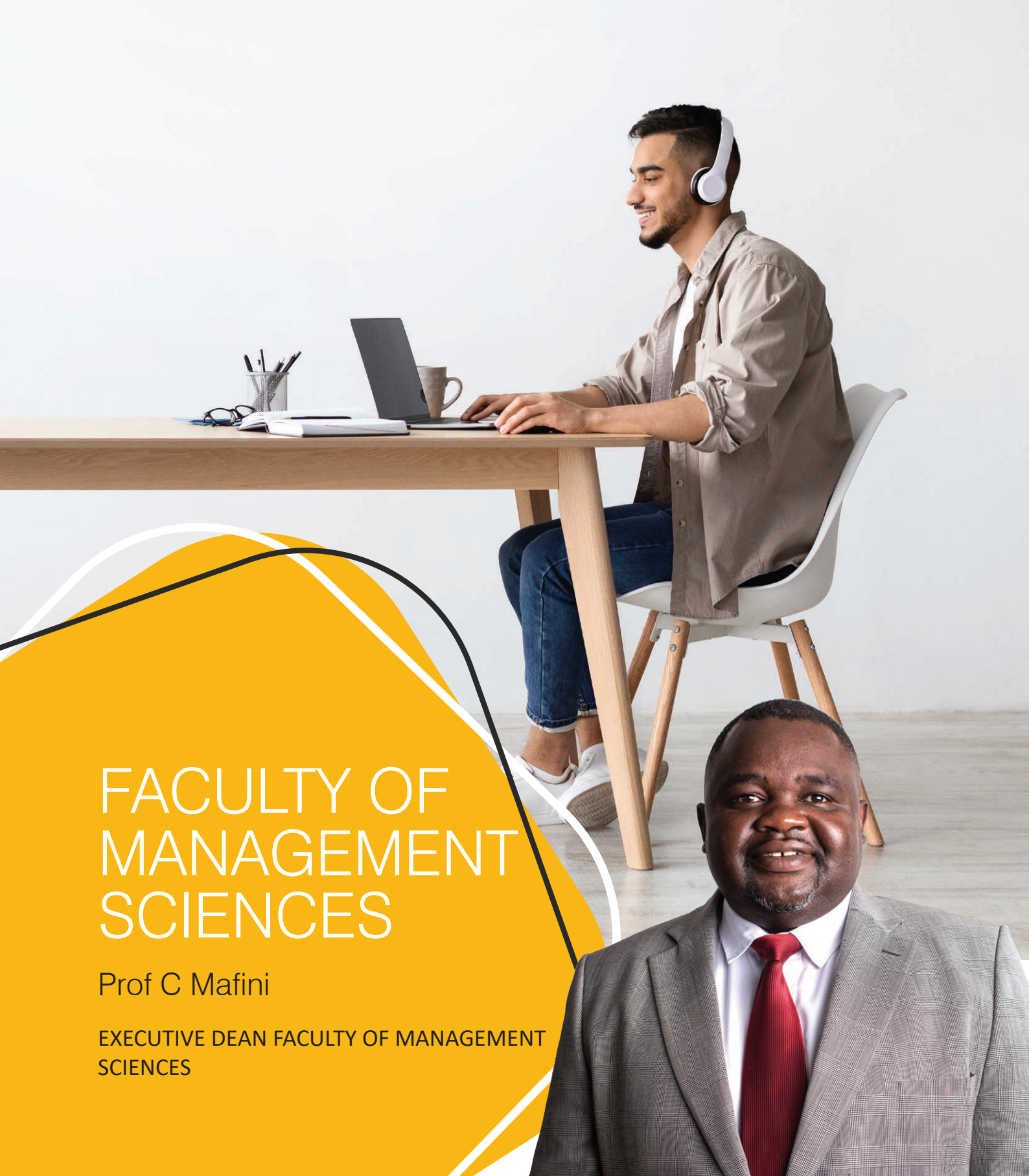
Title: A critical review of the application of marketing mediums in the accommodation sector: an SME perspective

Field: PhD: Tourism Management

Researcher: Van der Walt, D.

Title: Personalising the elements and principles of graphic design: an exploratory autoethnographic case study

Field: MTech: Graphic Design



FACULTY OF MANAGEMENT SCIENCES

Prof C Mafini

EXECUTIVE DEAN FACULTY OF MANAGEMENT
SCIENCES

MESSAGE FROM EXECUTIVE DEAN

In 2022, the Faculty of Management Sciences (FMS) continued to improve research quality and productivity through basic and applied Research. Despite the detrimental effects of the Covid-19 pandemic, the growth trajectory established in the previous years remained in place, and FMS achieved various milestones. The Faculty developed Research Focus Areas in consultation with staff members, and the staff members and internal stakeholders promoted them through roadshows.

These niches or specialised Research areas aim to address institutional, local, provincial, and national research and innovation priorities. The Faculty developed Research Focus Areas in each of the four departments in FMS, and they are assigned as follows:

1. Department of Human Resources Management: - People Management and Organisational Behaviour Studies
2. Department of Accountancy: - Financial, Cost Management Accounting, Financial Management, and Accountability
3. Department of Marketing: - Retail Business, and Sport Management - Digital Marketing, Consumer Behaviour Studies, Leisure, Sports Marketing, and Sustainability
4. Department of Logistics and Supply Chain Management: - Supply Chain Management, Logistics, and Sustainability Studies.

The Faculty experienced growth at the post-graduate level for 2022 with steady increases in both Masters and Doctoral enrolments, with 195 students on the database. A total of 12 Masters and four Doctoral degrees were conferred in 2022 within the four departments of the Faculty. The areas of Research within the Masters' and Doctoral degrees granted covered a broad spectrum of topical issues in the postmodern era, such as social media marketing, ethical and green supply chain management, emotional intelligence, women entrepreneurship, online learning, and knowledge management, among others. In this way, the Research conducted within the Faculty is relevant to current times and seeks to create new knowledge that shapes the future. Tribute is paid to the internal post-graduate and consulting supervisors for their dedication to duty and resilience in guiding the students from the conception to the finalisation of their studies.

Further reflection shows that the FMS made firm strides and set the tone for Research Publications among staff. The Faculty is proud to announce achieving 13 completed units in The Department of Higher Education and Training (DHET) in Research Outputs during 2022. FMS presented 12 peer-reviewed Research Papers at various academic conferences and published another 12 articles in DHET-accredited journals.

Notably, the authorship of these papers and articles shows extensive collaborations amongst internal staff and between them and external counterparts. Such linkages with other external researchers are critical for the implementation of future research projects and for enhancing the U' 'University's research footprint across the globe.

The decent representation of articles published in high-impact factor journals is also commendable. FMS held six post-graduate induction workshops between March and August 2022 to assist first-year Master and Doctoral students develop their research proposals.

Topics covered included library and data management skills, choosing a research topic, developing research objectives, writing a problem statement, writing a literature review, research methodology, data analysis, and academic writing skills. These workshops were quite popular among post-graduate students due to their effectiveness in assisting new post-graduate students in developing and harnessing research ideas and skills. The Faculty selected facilitators from a pool of external experts with impeccable track record in post-graduate supervision. At the end of 2022, we approved 13 Masters and six Doctoral degree Research proposals.

To empower staff members and continue to build a strong team of researchers within the Faculty, we had several Research Capacity Building Workshops. These included several post-graduate supervision training workshops, data analysis workshops, and an academic writing retreat. The workshops were well attended and sharpened the skills of staff members in the various research areas. The post-graduate supervision workshop stimulated the interest of many staff members, most of whom have since volunteered to participate in this activity. Through the writing workshop attendees produced a significant number of completed research articles, which the Faculty submitted to various academic journals for publication.

A Faculty Research Colloquium was held in October 2022 aimed at motivating staff to become active researchers. The first speaker was Prof KC Moloi, who spoke on the topic 'Publish or Perish: Should Academics be involved in Publishing'. A follow-up presentation delivered by Prof J Surujlal, spoke about developing a research culture at a University of Technology'. The final presentation made by prof DT Goon, touched on 'Supervise or perish: Should academics be involved in post-graduate supervision?' Staff members who attended the colloquium benefitted from these presentations and were encouraged to contribute to research development within the Faculty and the University at large.

On 9 November 2022, the FMS hosted a public lecture. The presenter was Dr Hod Anyigba from the Nobel International Business School in Ghana. Dr Anyigba presented his paper, 'Behavioural Economics: How does Covid-19 Phobia affect organisational performance?' Lessons for all 'stakeholders'. The memorable public lecture, delivered online, was attended by over 60 people and involved extensive discussions around the impact of the Covid-19 pandemic on productivity and the performance of organisations within South Africa.

Throughout 2022, research activities within the Faculty were supported through various committees' work. . Departmental Research and Innovations Committees (DRIC) were active in ensuring the quality of research within the four departments. The Faculty Research and Innovations Committee (FRIC) was fully functional at the faculty level, providing guidance to departments and recommending agenda items to higher University Committees for approval. The Faculty Research Ethics Committee (FREC), established in 2019, was visible throughout the year as it continued monitoring and evaluating all research-related proposals for ethical prudence.

Looking into the future, sustained stability of the Research function within the FMS is necessary through the appointment of a substantive Faculty Research Professor. Identifying and appointing postdoctoral fellows and linking research to performance management may facilitate the improvement of Research Outputs in the Faculty. Continued emphasis on research capacity building will assist in nurturing a proficient team of researchers in the Faculty. The Faculty should establish more extensive networks with external researchers to enhance future research collaborations. It is also essential to keep abreast of current developments worldwide, ensuring that the research conducted with the Faculty speaks to and contributes to such dynamics. It is further essential to ensure that Doctoral studies conducted within the Faculty are tailored to meet the increased interdisciplinary and transdisciplinary research within South Africa.

TMS extends gratitude to all staff members, post-graduate students, and the various committees in creating and fostering a research culture in the Faculty. TMS also acknowledges the support of both the DVC: Research, Innovation, and Commercialisation, as well as the Research Directorate. The efforts of Prof BA Mokena, the Acting Faculty Research Professor, and we also commend Prof M Dhurup, the then Executive Dean, in steering the Faculty in the various Research areas. In the forthcoming post-Covid-19 era, the future looks bright, with the FMS looking to increase the quality and quantity of its research by promoting a sustainable research and innovation culture by building onto the current capacity and capabilities of academic staff.

Prof C Mafini

EXECUTIVE DEAN FACULTY OF MANAGEMENT SCIENCES



Postgraduate Staff and Students Qualifications Completed in 2022

Name: Chivhugwa, T.

Qualification: MTech (Logistics)

Dissertation/Thesis Title: Factors determining ethical supply chain management in the fast-moving consumer goods industry

University / Institution: Vaal University of Technology

Name: Keta, K. T. D.

Qualification: MTech (Marketing)

Dissertation Title: Examining the effect of social media marketing dimensions on consumer attitudes and adoption among generation Y consumers

University/Institution: Vaal University of Technology

Name: Loko, L. M.

Qualification: MTech (Human Resource Management)

Dissertation Title: Quality of work life, job satisfaction and happiness among academics at a university of technology in southern Gauteng

University/Institution: Vaal University of Technology

Name: Mahlangu, D.

Qualification: DTech (Business)

Dissertation Title: Assessing the influence of internal environmental management systems on green packaging management, green information systems and organisational performance

University/Institution: Vaal University of Technology

Name: Maliwa, N.

Qualification: MTech (Human Resource Management)

Dissertation Title: The influence of job stressors on job satisfaction amongst university academics

University/Institution: Vaal University of Technology

Name: Makateng, R. A.

Qualification: MTech (Human Resource Management)

Dissertation Title: Emotional intelligence, resilience and happiness among police officers in the Sedibeng west district

University/Institution: Vaal University of Technology

Name: Mapalane, M.

Qualification: MTech (Management Accounting)

Dissertation Title: Evaluating the relationship between firm size and financial performance: a JSE vs ALTX perspective

University/Institution: Vaal University of Technology



Name: Magano, M. M. K.
Qualification: MTech (Logistics)
Dissertation Title: The influence of production planning on business performance as a risk management technique in the manufacturing industry
University/Institution: Vaal University of Technology

Name: Maila, Z. B.
Qualification: MTech (Logistics)
Dissertation Title: Supply chain integration, resilience and performance in South Africa
University/Institution: Vaal University of Technology

Name: Mudara, J. Z..
Qualification: DTech (Business)
Dissertation Title: Business strategy, finances performance and the survival of women-owned small and medium enterprises in Gauteng province
University/Institution: Vaal University of Technology

Name: Matshidza, N. V.
Qualification: MTech (Business Administration)
Dissertation Title: Strategic planning and its alignment with the budgeting process in selected national government departments
University/Institution: Vaal University of Technology

Name: Mutheiwana, M. B.
Qualification: MTech (Marketing Management)
Dissertation Title: Students' attitudes towards the use of a virtual learning environment with the presence of advertisements at a South African university of technology
University/Institution: Vaal University of Technology

Name: Sejake, L. A.
Qualification: MTech (Cost and Management Accounting)
Dissertation Title: An analysis of the relationship between working capital management and financial performance of JSE-listed construction companies in South Africa
University/Institution: Vaal University of Technology

Name: Mugwenhi, S.
Qualification: PhD (Business Administration)
Dissertation Title: Supply chain management practices and supply chain resilience in the South African public sector
University/Institution: Vaal University of Technology

Name: Sebolaoa, R. E.
Qualification: MTech (Human Resource Management)
Dissertation Title: The influence of person-environment fit, person-organisation fit and person-job fit on career satisfaction and intention to leave among university academics
University/Institution: Vaal University of Technology



Name: Tarambiwa, E.
Qualification: PhD (Business Administration)
Dissertation Title: People-centred knowledge management systems and supply chain performance: The case of small and medium enterprises in Zimbabwe
University/Institution: Vaal University of Technology

Conferences (Papers and posters presented)

Presenter: Chinomona, E.
Title of Paper: Modelling the influence of green supply chain practices on environmental performance: beverage industry of South Africa
Conference: Social Sciences International Research Conference
Place: Virtual Conference
Date: 13-15 October 2022
ISBN/ISSN: N/A

Presenter: Chinomona, E.
Title of Paper: Modelling the influence of communication, academic and welfare support among first year students' satisfaction: the case of one university of technology
Conference: 32nd Annual Conference of the Southern African Institute of Management Scientists
Place: Virtual Conference
Date: 13-14 September 2022
ISBN/ISSN: N/A

Presenter and co-presenter: Sebolaoa, R.E. & Dhurup, M.
Title of Paper: The influence of person-environment fit, person-job on career satisfaction among university academics
Conference: Social Sciences International Research Conference
Place: North West University
Date: 15 October 2022
ISBN/ISSN: N/A

Presenter: Mudhombo, I.
Title of Paper: Robust Adaptive LASSO and Adaptive E-NET variable selection and regularisation in quantile regression in the presence of collinearity influential points
Conference: The 62nd Annual Conference of the South African Statistical Association
Place: Stellenbosch
Date: 29 November – 03 December 2022
ISBN/ISSN: N/A

Presenter: Magapa, T.
Title of Paper: 1. E-commerce in South Africa: business practices in customer acquisition and retention
 2. Real-time crisis detection: cookbook for community developers
Conference: Proceedings of 13th World Congress of the RSAI, Smart Regions-Opportunities for sustainable development in the digital era
Place: Marrakech, Morocco
Date: 25-28 May 2022
ISBN/ISSN: N/A

Presenter and co-presenter: Ngonkem Ngobena, N. & Mafini, C.
Title of Paper: Business challenges and opportunities facing small and medium enterprises in the Sedibeng region
Conference: Social Sciences International Research Conference
Place: Virtual Conference
Date: 13-15 October 2022
ISBN/ISSN: N/A

Presenter and co-presenters: Mutekwe, L., Mafini, C. & Chinomona, E.
Title of Paper: The underlying factors of supply chain risk management in the food retail industry in Harare, Zimbabwe
Conference: 32nd Annual Conference of the Southern African Institute of Management Scientists.
Place: Virtual Conference
Date: 13-14 September 2022
ISBN/ISSN: N/A

Presenter: Mokoena, B. A.
Title of Paper: Examining the effect of social media marketing dimensions on consumers' attitudes among generation Y consumers in Gauteng province
Conference: Social Sciences International Research Conference
Place: North West University
Date: 13-15 October 2022
ISBN/ISSN: N/A

Presenter: Makoena, B. A.
Title of Paper: Leadership power bases' influence on quality of work life among employees at a selected retail outlet in Gauteng province
Conference: Social Sciences International Research Conference
Place: North West University
Date: 13-15 October 2022
ISBN/ISSN: N/A

Presenter: Shamhuyenhanza, R. M.
Title of Paper: Adoption of electronic airtime as a green marketing cue: evidence from the telecommunications sector in Zimbabwe
Conference: Social Sciences International Research Conference
Place: Virtual Conference
Date: 13-15 October 2022
ISBN/ISSN: N/A

Presenter: Sharp, K. L.
Title of Paper: The influence of general Y students' perceptions of brand communication, service quality and brand satisfaction on brand loyalty in technical and vocational education training colleges in Gauteng: pilot study
Conference: 12th Global Conference on Business & Social Sciences, GATR Enterprise



Place: University Malaya, Kuala Lumpur, Malaysia
Date: 08-09 October 2022
ISBN/ISSN: N/A

Presenter: van der Westhuizen, J. P.
Title of Paper: Antecedents of supply chain agility in a developing economy
Conference: Social Sciences International Research Conference
Place: Virtual Conference
Date: 13-15 October 2022
ISBN/ISSN: N/A

Publications (Journals)

Author: Chinomona, E.
Title: Analysing competitive advantage of the retail industry in South Africa
Journal: African Journal of Business and Economic Research
Volume: 16
Issue: 4
Page numbers of article: 180-201
ISSN: <https://doi.org/10.31920/1750-4562/2021/v16n4a9>
Author: Chinomona, E.
Title: The drivers of customer collaboration in e-business: a case of food retailers in southern Gauteng
Journal: Journal of Contemporary Management
Volume: 18
Issue: 1
Page numbers of article: 433-454
ISSN: <https://doi.org/10.35683/jcm20139.112>

Author: Chinomona, E.
Title: The effects of loyalty, satisfaction and motivation on students' performance: a study of higher education in South Africa
Journal: Global Journal of Business and Social Science Review
Volume: 9
Issue: 1
Page numbers of article: 41-49
ISSN: http://gatrenterprise.com/GATRJournals/GJBSSR/vol9_2021_issue1.html

Author: Dhurup, M.
Title: Employees' perceptions of retrenchment on job stress and organisational commitment in a mining company
Journal: Africa Journal of Employee Relations (AJER)
Volume: 45
Issue: Online
Page numbers of article: 1-23
ISSN: 2664-3731



Author and co-authors: Loury-Okoumba, W. V. & Mafini, C.
Title: Supply chain management antecedents of performance in small to medium scale enterprises
Journal: South African Journal of Economic and Management Sciences
Volume: 24
Issue: 1
Page numbers of article: 1-13
ISSN: 2222-3436

Author: Mafini, C.
Title: Antecedents of sustainable procurement and inclusive business in South Africa
Journal: International Journal of Supply Chain Management
Volume: 10
Issue: 3
Page numbers of article: 18-35
ISSN: 2050-7399

Author and co-authors: Seteni, L. A., Dhurup, M. & Joubert, P. A.
Title: Employees' perception of the effects of retrenchment on job stress and organisational commitment in a mining company
Journal: African Journal of Employees Relations (AJER)
Volume: 45
Issue: Online
Page numbers of article: 1-23
ISSN: 2664-3731

Author and co-author: Muposhi, A. & Dhurup, M.
Title: Psychosocial correlates of deceptive e-cigarette counterfeit susceptibility: a Web's law persuasion-trait theory perspective
Journal: African Journal of Business & Economic Research
Volume: 16
Issue: 2
Page numbers of article: 97-117
ISSN: 1750-4554

Author and co-author: Masitenyane, L. M. & Dhurup, M.
Title: Antecedents of relationship intentions and its association with suppliers' relationship quality in a business-to-business environment
Journal: International Journal of Advanced Science and Technology
Volume: 29
Issue: 2
Page numbers of article: 175-192
ISSN: 2005-4238

Author and co-authors: Masitenyane, L.M., Dhurup, M., Mokoena, B.A. & Muposhi, A.

Title: Antecedents of relationship intentions in South Africa construction industry business-to-business environments: a factor analytical approach
Journal: International Journal of Business and Management Studies
Volume: 12
Issue: 1
Page numbers of article: 147-162
ISSN: 1309-8047

Author and co-author: Muposhi, A. & Shamhuyenzva, R. M.
Title: The influence of customer-based brand equity on customer satisfaction and brand loyalty: evidence from South African mobile Telecommunication industry
Journal: International Journal of Business and Management Studies
Volume: 11
Issue: 2
Page numbers of article: 32-47
ISSN: 1309-8047

Author: Cassim, R.
Title: An empirical study of comparison between EMS and BPIA in the JSE
Journal: Journal of Economic and Financial Sciences
Volume: 14
Issue: 1
Page numbers of article: 1-8
ISSN: (Online) 2312-2801, (Print) 1995-7076

Author: Ntshingila, L.
Title: Assessing purchasing technical skills as a pre-condition for effective purchasing management within the Sedibeng district municipality, South Africa
Journal: Journal of Contemporary Management
Volume: 18
Issue: 2
Page numbers of article: 162-183
ISSN: 1815-7440

Author: Imuezerua, E. O.
Title: Improving water pricing decisions through material flow cost accounting model: a case study of the Politsi water treatment scheme in South Africa
Journal: Environmental Development and Sustainability
Volume: 23
Issue: February 2022
Page numbers of article: 2243-2260
ISSN: 1815-7440

Postgraduate Students Induction Programme

Name: Fani, R.

Topic: Data management skill

Place: Library Training Room

Date: 08 May 2022

Name: Cassim, L.

Topic: Session 1: Choosing a topic, narrowing scope, key components of a postgraduate student's good research proposal, conducting a literature review, referencing

Place: Virtual training

Date: 17 April 2022

Name: Cassim, L.

Topic: Session 2: Key concepts in research design and methodology quantitative, qualitative, mixed methods research, sampling, data collection, data analysis – quantitative (descriptive and inferential statistics) and qualitative (coding), error, bias, reliability, validity, trustworthiness, pilot testing, ethics

Place: Virtual training

Date: 15 May 2022

Name: Cassim, L.

Topic: Session 3: Writing a good literature review, conceptual and theoretical frameworks, chapter overview thesis writing, interpretation of results and referencing

Place: Virtual training

Date: 12 June 2022

Name: Moloi, C.

Topic: Understanding Research Philosophy and Approaches to Theory Development

Place: Vaal University of Technology

Date: 06 November 2022

Name: Moloi, C.

Topic: Critical writing and data analysis in qualitative research

Place: Vaal University of Technology

Date: 13 November 2022

Research Events: Capacity Building Workshops

Research Excellence Training Academy

Facilitator: Chinomona, R.

Topic: Postgraduate Supervision Training Workshops

Date: 22-23 November 2022

Facilitators: Chinomona, R. & Mishi, S.

Topic: Advanced SPSS Data Analysis Workshop for the Faculty of Management Sciences

Date: 04-06 October 2022

Facilitators: Chinomona, R. & Mishi, S.

Topic: Basic Data Analysis Workshop

Date: 23-25 August 2022

Facilitators: Chinomona, R. & Mishi, S.

Topic: Intermediate SPSS Data Analysis Workshop

Date: 09-10 September 2022

Staff/Students Writers Retreat

Topic: Virtual Writing Retreat

Host: Centre for Higher and Adult Education, Stellenbosch University

Date: 31 August -03 September 2022

Faculty Research Colloquium

Facilitator 1: Moloi, K. C.

Topic: Publish or Perish: Should academics be involved in publishing?

Facilitator 2: Surujlal, J.

Topic: Developing a Research Culture in a University of Technology

Facilitator 3: Goon, D. T.

Topic: Supervision or Perish: Should academics be involved in postgraduate supervision?

Date: 28 October 2022



VUT EKHAYA ALUMNI MESSAGE

MaVUTi, Ma-Vallies, VUT alumni, and friends of VUT are all Vaal University of Technology graduates and former students. We may have journeyed far from diverse communities, different worlds and nationalities, but we share the same identity from our alma mata. Our MaVUTi experiences have shaped who we have become individually in our career paths and made us better showcase our talents indiscriminately. The Alumni Network continues to be a platform where we belong as family members, colleagues, and better alumni. Through the years, we have undergone a transformation from when we were a college, a Technikon and then a University of Technology. With your input, we have recently completed the re-branding exercise, and urge you to continue engaging with the University and your fellow alumni.

Our lives are packed with developing careers, connecting with families, raising kids, travelling, and the communities who raised us. Still, we individually or collectively find a way to engage with our Alumni Networks. In this regard, we need you in so many ways to;

- Attend and participate in activities and events, whether live or virtual.
- Become an alumni ambassador to students, share how VUT has shaped your life, and resourcefully provided you with a community for life.
- Join the student mentoring program and participate in our Faculty and Student-life seminars.
- Volunteer for advisory boards and alumni committees.
- Display your pride by wearing and promoting the VUT brand and MaVUTi gear.
- Consider giving back to your alma mata to keep the MaVUTi legacy alive.

On behalf of the Alumni Association and Convocation, in our quest to preserve a mutually beneficial, enduring relationship, we are constantly seeking meaningful ways to embrace your needs and unite our efforts to grow and develop the Vaal University of Technology.

Please share with us your latest milestones; Wherever you are, at whatever stage of your life, we have Networks to share with your other MaVUTis.

<https://www.facebook.com/maVUTi>

https://twitter.com/VUT_Online

<https://www.youtube.com/channel/UCDzwOVrN1e25VLkWkwf-hzw>

We are grateful for all the support we have enjoyed as a University at the individual and corporate levels to help us to contribute meaningfully to the career development of our MaVUTis.

Thanks You

Peter Masombuka
HOD: Alumni Relations
Alumni Relations
peterm@vut.ac.za

Comfort Madalane
Coordinator
Pre-Alumni:
comfortm@vut.ac.za



2022 POSTGRADUATE REPORT

REGISTRATION TOTALS 2018-2022

Total Registrations					
Applied and Computer Sciences	141	149	146	161	137
Engineering and Technology	148	199	195	189	187
Human Sciences	45	61	68	52	88
Management Sciences	162	155	188	141	156
Total	496	564	597	543	568

2022 POSTGRADUATE STATISTICS – (Per faculty, per department)

Faculty of Applied and Computer Sciences		
Department	Registered Students MTech	DTech/PhD
Chemistry	39	13
Biotechnology	31	10
Information Technology	33	
Information Systems		11
Total	103	34
Grand total:	137	

Faculty of Engineering and Technology		
Department	Registered Students MTech	DTech/PhD
Chemical Engineering	46	25
Metallurgical Engineering	17	
Mechanical Engineering	20	8
Industrial Engineering	4	
Electrical Engineering	42	5
Civil Engineering	17	3
Total	146	41
Grand total:	187	

Faculty of Human Sciences		
Department	Registered Students MTech	DTech
Education	35	
Tourism and Hospitality Management	12	
Public Relations Management	9	
Photography	2	
Multimedia	4	
Graphical Design	1	
Food Service Management	5	4
Food and Beverage Management	7	
Fine Art	6	
Fashion	2	1
Total	83	5
Grand total:	88	

Faculty of Management Sciences		
Department	Registered Students MTech	DTech/PhD
Marketing	14	4
Logistics	28	
Labour Relations Management	4	
Human Resources Management	20	
Cost and Management Accounting	13	
Business Administration	32	41
Total	111	45
Grand total:	156	

Postgraduate Study Fees

Postgraduate study fees increase by 8% per year.

	2018	2019	2020	2021	2022
Total fees per year:					
MTech:	R5 940.00	R 6 250.00	R6 590.00	R6 892.00	R7 184.00
Masters/MEng:	R9 600.00	R10 100.00			
DTech:	R4 130.00	R 4 460.00	R6 590.00	R6 892.00	R7 184.00
PhD/DEng	R8 890.00	R 8 890.00			

RESEARCH OFFICE



Dr Simphiwe Nelana
Acting DVC: Research, Innovation,
Commercialisation & Internationalisation



Dr Susanna Burger
Acting Director: Research &
Higher Degrees



Mrs. Petro van der Walt
Senior Administrator: Research



Mrs. Chantelle Sonnekus
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