

FACULTY OF NATURAL SCIENCES

NEWSLETTER: MARCH 2025



Albert Modi, Dean of Natural Sciences

South African Public Relationship with Science Conference

Failure is only a postponed success as long as ambition is guided by courage.

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Executive Summary

This month we learnt about the importance of planning in advance, looked back in time and the possibility to establish a framework that must be used to set effective personal and collective goals. The performance management plan is currently being subjected to a test. Results of self-evaluation will be published in Term 2. We appreciate the support offered by the university - existing national agreements, indirect and direct WSU funding. We acknowledge that change of attitude and culture are necessary to enhance our efforts for teaching, research and community engagement. While student registration plan was derailed, we have a success story to tell

and alternative plans to meet the university goals for teaching and research. Registration of First Time Entry students (FTENS) is our major area of success. Registration of returning students is satisfactory despite the institutional and national challenges. Future prospects for student success rate require a thorough review of our teaching and research strategies which must include implementation of continuous staff training. Congratulations to staff for the obvious enthusiasm to achieve the FNS and WSU strategic goals. The FNS supporters, collaborators and partners remain our pillar of hope as we respond to WSU, local, national and international imperatives.

Administration

The final registration numbers remain unconfirmed. Provisional data are shared in Figure 1. Challenges associated with returning students in this regard are managed well. The results of the new faculty initiative to mentor FTENS from the time of first entry throughout their study periods, the Best Science Student from Day One or BSc StuDo) started with 72% of them participating in a voluntary aptitude test (Figures 2; 3). This programme will assist us to introduce a focussed soft curriculum intervention that will have positive impacts in the lives of our students while they study at WSU and prepare them for employability in the future. We hope to convince other faculties to join this programme. It is pleasing to report that Senate approved the re-establishment of our Chemistry Honours programme which is aligned to the repositioning of our curriculum to respond to graduate employability. This will enhance our attempts for strategic collaborations with industry.

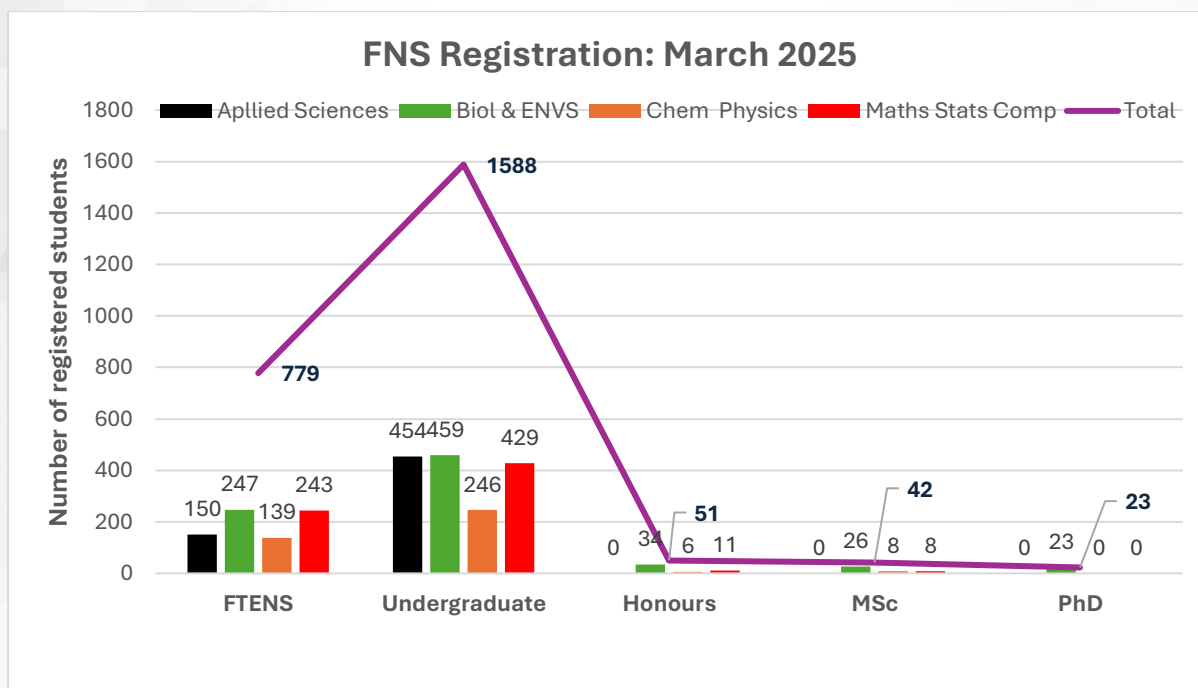


Figure 1. Current numbers of registered students in FNS. FTENS, returning undergraduate, Honours, MSc and PhD.

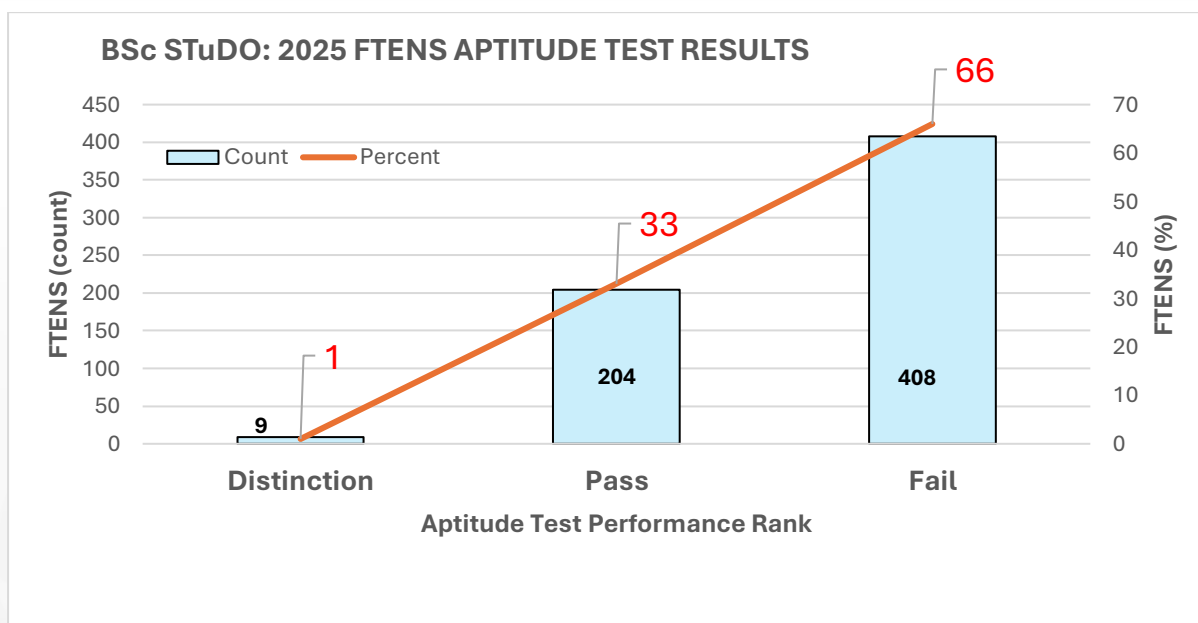


Figure 2. Aptitude test written by 621 FTENS. Distinction ($\geq 75\%$), Pass (50 – 74%), Fail ($< 50\%$). Results will be used to produce performance metrics and mitigation of academic performance risk in collaboration with the WSU Quality Assurance Department. See Figure 5 below.

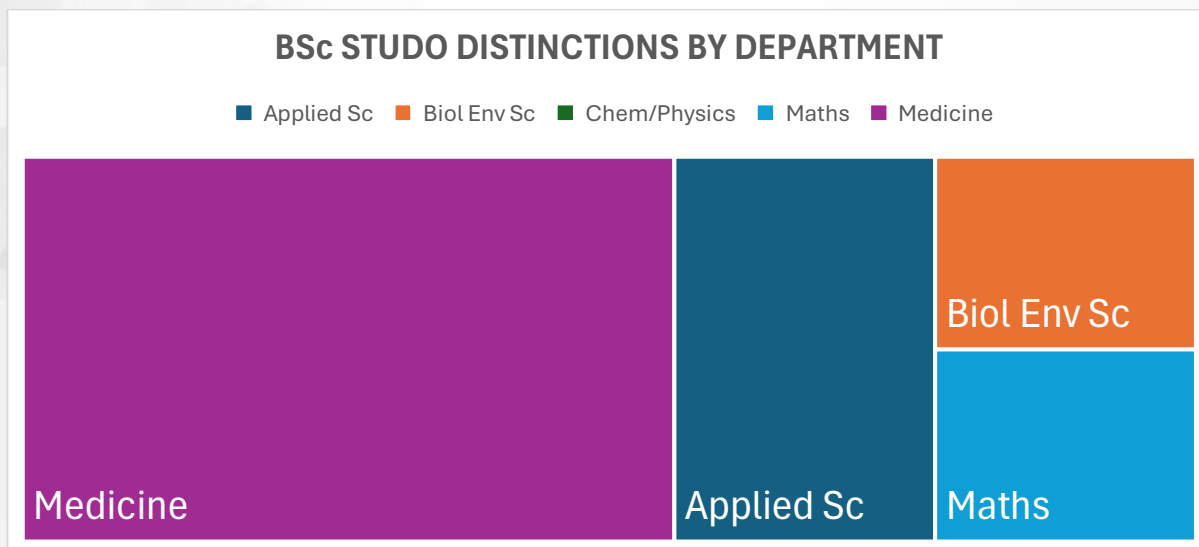


Figure 3. The top achievers of the FTENS BSc STuDo aptitude test. Medicine (56%), Applied Sciences (22%), Biological and Environmental Sciences (11%), Mathematical Studies and Computing (11%).

Teaching and Learning

Student throughput rates for the faculty seem to be reasonable at undergraduate levels in terms of students who sit for examinations (Figure 4; 5). However, we should be concerned by the high dropout rates and delayed completion, especially in the NMD located departments. The faculty has agreed to improve the situation by implementing a meaningful blended learning approach (Figure 6). The Executive Dean has started to engage with the relevant service providers to assist staff with training for AI (Artificial Intelligence) and its relevance to teaching and research (Figure 7).

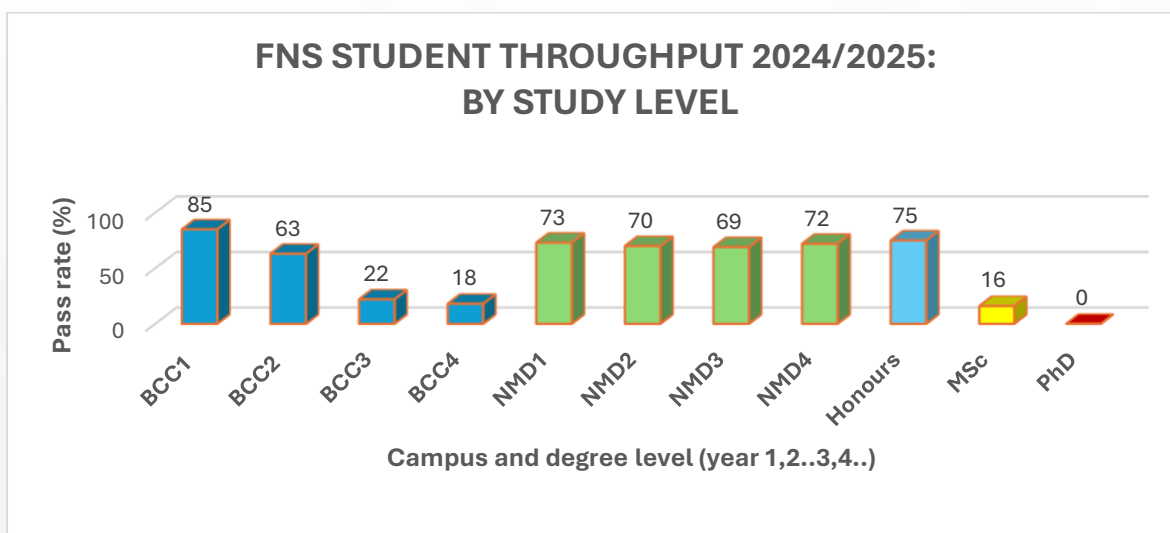


Figure 4. Undergraduate (levels 1, 2, 3 and 4) and postgraduate student throughput in the faculty across campuses (BBC and NMD) for 2024/2025 academic year.

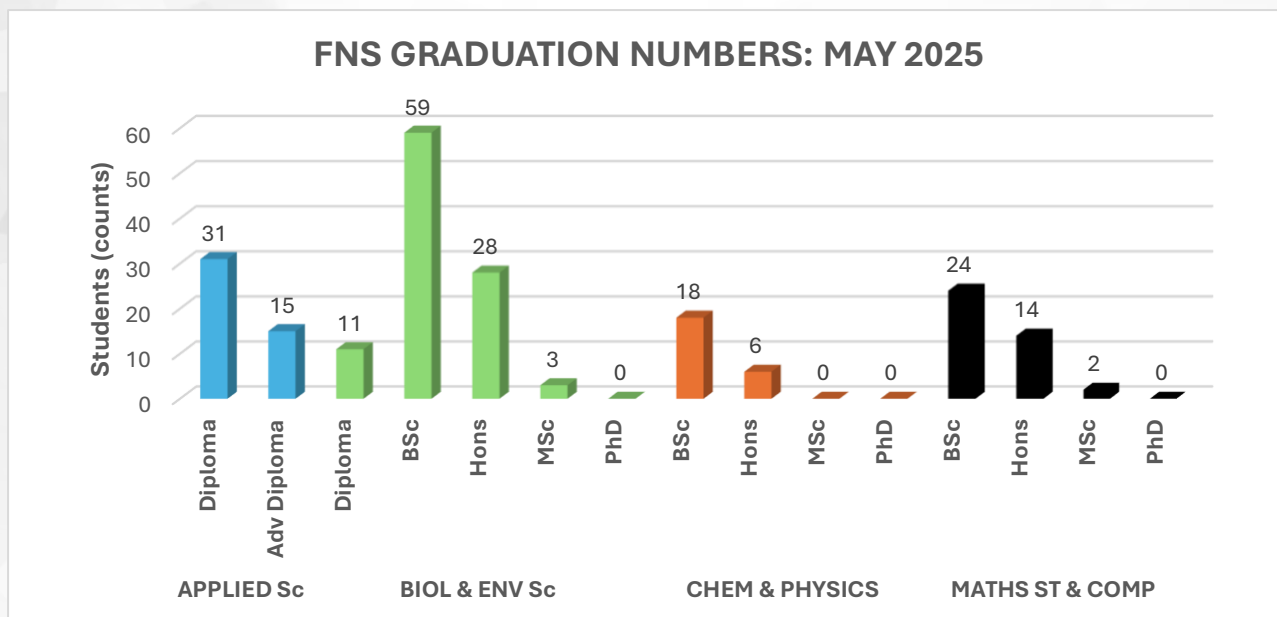


Figure 5. Graduation rates show a clear indication for serious interventions

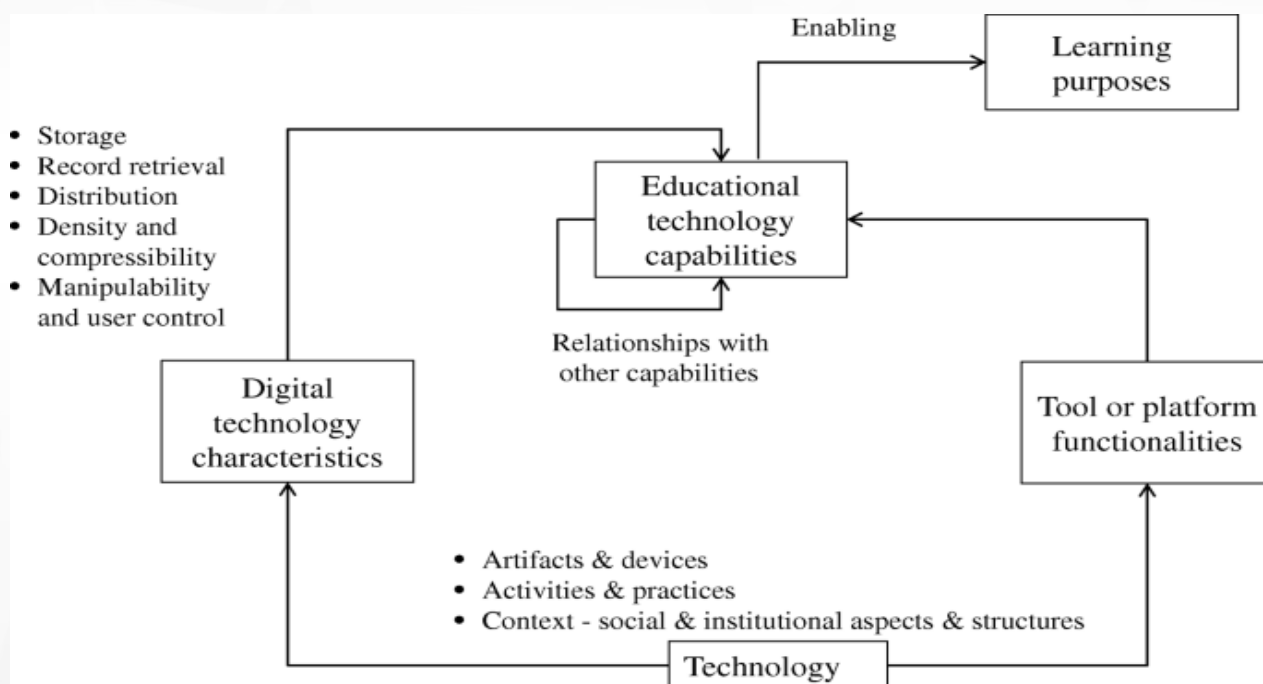


Figure 6. Integrated broad-based FNS plan to train staff in AI for impactful blended teaching and learning. Read: <https://doi.org/10.1080/2331186X.2025.2455228>

Courses and Learning Paths for FNS Staff and Students



Figure 7. Opti-Num has agreed to train FNS staff and students for certificates.

Research

A partial report of our research productivity for 2024/2025 is currently subject to auditing by the WSU Research Department. We remain with the February statistics in the regard (not shown). From Term 2 onwards, the faculty will implement the Nominal Faculty Research Award competition approved by the Board in 2024 to highlight the quality and impact of our research outputs. On that note, it will be prudent to report Term 1, 2025, research outputs later in April. However, I wish to highlight some 2025 top achievers.

Research highlights – top researcher publications for term 1, 2025

Applied Sciences

- **Emerging Passive Cooling Technologies and Their Multidisciplinary Applications: An Integrative Review**

By Xhamla Nqoro, **Raymond Taziwa**, Thabo Hasheni, Solomon Giwa

International Journal of Energy Research, 2025. <https://doi.org/10.1155/er/3489021>

Biological and Environmental Sciences

- **Randomized Trial: A Pilot Study Investigating the Effects of Transcendental Meditation and Yoga Through Retinal Microcirculation in Cardiac Rehabilitation** By Adam Saloň; Karin Schmid-Zalaudek; Bianca Steuber; Maximilian Elliot Rudolf; Till Olaf Bartel; Petra Mächler; Andreas Dorr; Rainer Picha; Per Morten Fredriksen; **Benedicta Ngwenchi Nkeh-Chungag** et al. Journal of Clinical Medicine, 2025, 14(1), 232; <https://doi.org/10.3390/jcm14010232>

Chemistry and Physics

- **Isolation and characterization of fatty acid esters from *Cyperus marginatus* Thunb. leaf, their in vitro biological and in silico molecular docking studies**

By **Gugulethu M. Miya, Ayodeji O. Oriola**, Pallab Kar, Adebola O. Oyedeji

Journal of Pharmacy and Pharmacognosy Research, 2025, 13,(1), pp. S27-S46. <https://doi.org/10.1016/j.molstruc.2024.141009>

- **Evaluation of Physicochemical Properties of Cadmium Oxide (CdO)-Incorporated Indium–Tin Oxide (ITO) Nanoparticles for Photocatalysis**

By Habtamu Fekadu Etefa and **Francis Birhanu Dejene**

Journal of Pharmacy & Pharmacognosy Research, 13 (s1), S27-S46, 2025.

Mathematical Studies and Computing

- **Subsequential Continuity in Neutrosophic Metric Space with Applications**

By Vishal Gupta, Nitika Garg and **Rahul Shukla**

Computation **2025**, 13(4), 87; <https://doi.org/10.3390/computation13040087>

Research highlights – programmes, collaborations and partnerships

Biological and Environmental Sciences

The Marine Biology Laboratory of FNS, led by Dr Theminkosi Dlaza, received NRF accolades for excellent performance in the 2024/2025 fiscal year in terms of meeting the research objectives. This led to a donation of genomics equipment by DIPLOMICS (Distributed Platform in OMICS), one of 13 Research Infrastructures established by the Department of Science and Innovation through its South

African Research Infrastructure Roadmap (SARIR). This relationship will lead to a collaboration between FNS and the Centre for Proteomic & Genomic Research, a TIA Technology Platform (Figure 8).

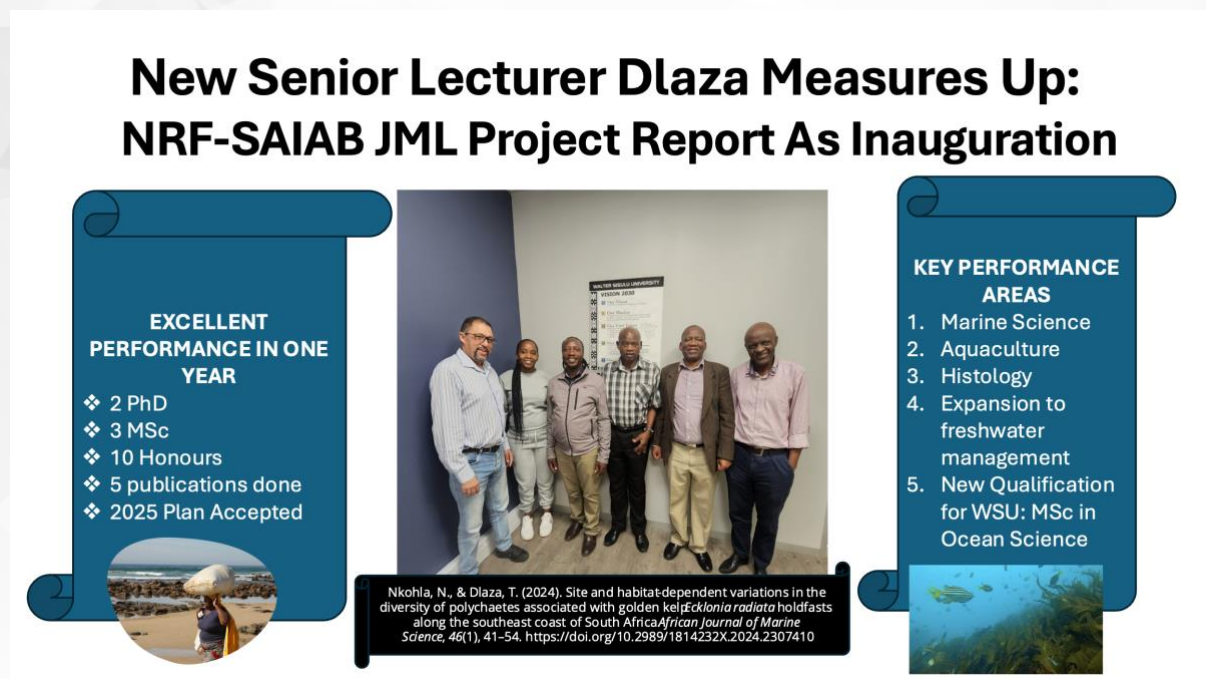


Figure 8. Dr Theminkosi Dlaza received NRF and DIPLOMIS support for excellent research.

Community Engagement

The Department of Mathematical Studies and Computing achieved two long-term national collaborations. The Institute for Mathematical Sciences and Applications is one of the core pillars of a new National Centre for Mathematical Sciences (Figure 9). The second pillar of NCoMS will focus on the pre-university mathematical sciences, informed by the Revised National Strategy for Mathematics, Science and Technology Education (2019 – 2030). To this effect, WSU is now part of the Data Intensive Research Initiative of South Africa (DIRISA) programme (NRF and SAASTA). Fifteen High Schools from the OR Tambo District will have their learners trained at WSU. The Mathematics FTENS who are part of the faculty BSc STuDO programme will participate for their study period at WSU (Figure 10).

WSU Receives National Graduate Academy for Mathematical and Statistical Sciences Grant Share

The project is designed to support the development of mathematical and statistical sciences through staff development to obtain MSc and PhD degrees, mobility, ,,,,



HOD, Dr Rekha Panicker
Part of the Consortium
Leadership of Nine
Institutions

**R10
million**



Walter Sisulu University
In pursuit of excellence

OUR CONSORTIUM PARTNERS

- ❖ Cape Peninsula University
- ❖ University of Zululand
- ❖ University of Limpopo
- ❖ University of the Western Cape
- ❖ University of Venda
- ❖ Sol Plaatje University
- ❖ Sefako Makgatho University
- ❖ University of Fort Hare

**ALL THE BEST TO OUR
STAFF BENEFICIARIES**

1. Matu Naniswa
2. Ncube Bokang Andrew
3. Ketelo Mbikazi
4. Yalezo Obakhe
5. Jubane Ido

$$Ax + By = C$$

A x + B y = C
Variables Constant

Figure 9. MSC Department joined the Institute for Mathematical Sciences and Applications, a new National Centre for Mathematical Sciences.



Figure 10. Data Intensive Research Initiative of South Africa (DIRISA) programme is a new community engagement project of MSC and WSU. Fifteen OR Tambo District High Schools are supported to work with BSc STuDO students.

Following an invitation to contribute research presentations and keynote address at the National Smart Village Conference ([Conference On Smart Villages 2025 - Call for Abstracts | NWU | North-West University](#)), [PR-with-Science Programme.indd](#), FNS Dean was invited to participate in the national dialogue during the South African Public Relationship with Science Conference ([PR-with-Science Programme.indd](#)). This will lead to formalisation of research-led community engagement partnerships with government, other universities and industry (Figure 11).



Figure 11. FNS participation in the DSTI national conference will lead to research-led community engagements for the benefit of Eastern Cape.

Staff Achievements

Congratulations to the FNS staff who are promoted this year:

- i. Dr Raymond Taziwa, promoted to Associate Professor
- ii. Dr Thembinkosi Dlaza, promoted to Senior Lecturer
- iii. Dr William Dzemo, promoted to Senior Lecturer

We also celebrate the achievement of Dr Paulina Phoobane for obtaining a PhD in Statistical Modeling (Figure 12).

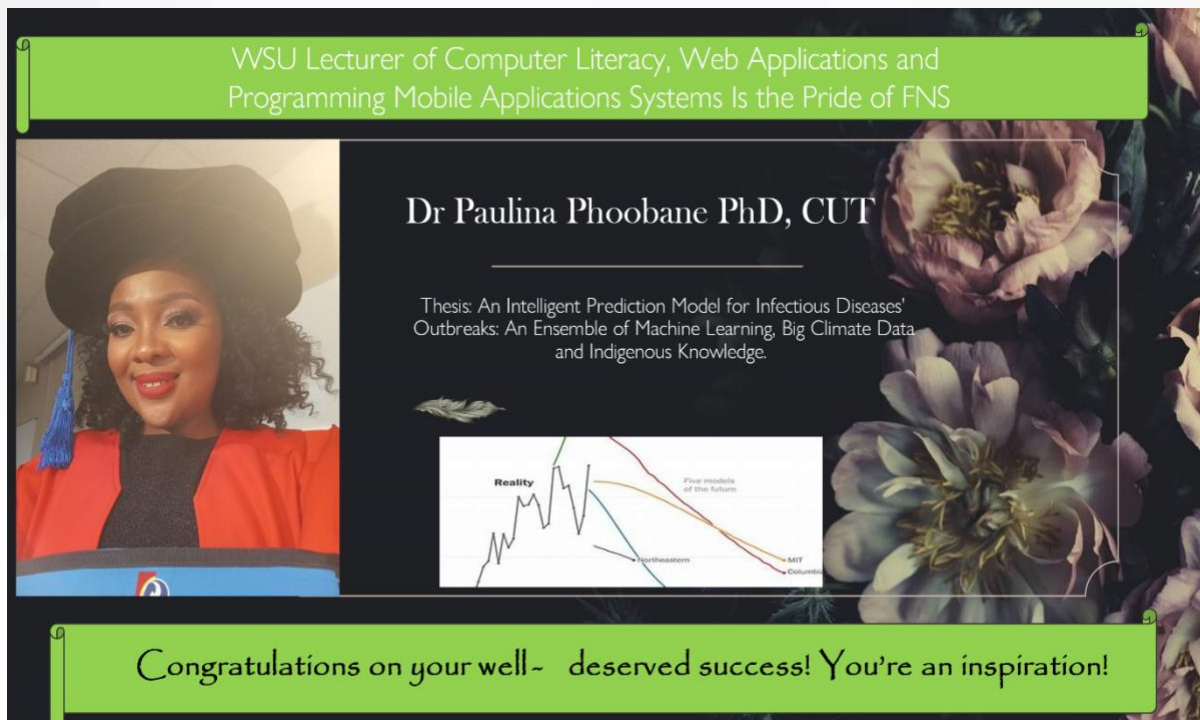


Figure 12. Dr Paulina Phoobane obtained a PhD in Statistical Modeling.

Announcements

- i. Next Faculty of Natural Sciences Board Meeting: 14 April 2025. All Committees must prepare submissions by 10 April 2025.
- ii. 3RD^[SEP] Multi-Inter-Transdisciplinary Conference^[SEP] on^[SEP] Africa^[SEP] Transformation^[SEP] Perspectives. [MITC 2025 CALL FOR PAPERS.cdr](#)
- iii. Library Training: Increasing research visibility without paying APCs: Open Access and Transformative Agreements: 03 April 2025 (13H00). sncoyini@wsu.ac.za
- iv. South African Research Chairs Initiatives (SARChI) Open Call-Basic Science Chairs. Applications should be submitted no later than 15 May 2025 on the NRF Connect System, by the Deputy Vice Chancellors responsible for Research and validated by the relevant Designated Authority (DA) on or before 22 May 2025. Contact Ms Andisiwe Jukuda, Professional Officer: South African Research Chairs Initiative (phone: 012 481 4113; email: AH.Jukuda@risa.nrf.ac.za)
- v. Call for Nomination of ASSAf Members. [ASSAf-Call-for-new-Member-Nominations_2024.pdf](#)
- vi. ACADEMY OF SCIENCE OF SOUTH AFRICA (ASSAf) Annual Performance Plan for 2025 to 2026. [ASSAf-2025-2026-APP_16-01-25.pdf](#)