

# News

Faculty of Science

## Vhembe Visit 2023

### A partnership between Nelson Mandela University and University of Venda (UNIVEN)

Nelson Mandela University, in collaboration with the University of Venda (UNIVEN), on 2– 5 May embarked on a remarkable science outreach program in the Vhembe District of Limpopo. The aim was to engage school learners, educators, and communities in promoting the significance of science in society. This endeavour aimed to bring the wonders of science closer to the local community and ignite curiosity among young minds.

Our faculty has a long standing and healthy relationship with Vhembe District through outreach activities. This has profiled the institution as one which is no longer a Metropolitan but one which is national, continental, and international. Partnering with the University of Venda is of strategic importance to our faculty. Under Engagement and

**“Reached 3002 learners across 57 high schools in the Vhembe District.”**

Partnerships our strategy calls for us to have a footprint in Africa. The University of Venda is closer to most Southern African universities outside South Africa than to most universities in SA. This is in addition to our aspirations to partner with rural universities to advance “science for society”.

A key objective of the outreach initiative was to nurture scientific inquiry and critical thinking among students in the Vhembe District. The faculty organized a range of engaging activities from question-and-answer sessions to science shows, career guidance, and workshops on academic requirements, the program covered a broad range of topics. Exhibitors showcased their expertise and provided valuable insights into various scientific disciplines. Learners were encouraged to consider careers in science and were presented with resources to guide their future endeavours.

In conjunction with the outreach activities, a Collaboration Symposium took place at the University of Venda's Research Centre. The symposium provided an opportunity for Nelson Mandela University and University of Venda researchers to present their ongoing research projects and explore potential avenues for collaboration. Topics ranged from medicinal plants and natural resource science to renewable energy research and climate-smart forestry education.

The program attracted a diverse range of schools from across the Vhembe District. Over the course of four days, 57 schools had the opportunity to participate, with each day dedicated to specific circuits and clusters within the district. The engagement spanned Niani Circuit, Tshilamba Circuit, Vhembe West, and the Nzhelele Education Cluster, ensuring a comprehensive reach throughout the region.



*High school learners from Niani Circuit learning how to code.*



PhD candidate sharing information about the various science programs at Nelson Mandela University.

## Neuroscience Research Team Brain Awareness Week

Written by: Dr. Duyilemi Chris Ajonijebu



In March 2023, the Neuroscience Research Team (NRT) and the Human Physiology Department of Nelson Mandela University's Science Faculty joined forces to organize their first annual Brain Awareness Week (BAW) event.

The main objective of the 2023 BAW project was to raise public awareness about brain function, health, and disease in the Nelson Mandela Bay metropolitan municipality, with the common goal of promoting brain health and improving quality of life for all.

In response to the growing challenge of global drug abuse and its detrimental impact on local communities, a group of postgraduate students and neuroscientists from the Human Physiology Department, who are also members of the NRT, conducted advocacy visits to two schools, Paterson High School and Walmer Secondary School, on March 13th and 15th, 2023, respectively.

### Advocacy Visits

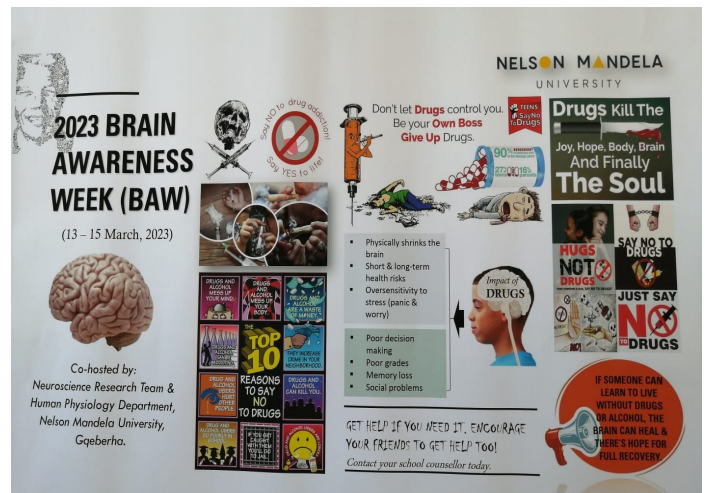
During the visit to Paterson High School, two presentations were delivered on the dangers of drug abuse by Shiraz Ackerdien, a master's student in the Human Physiology Department, and on how drugs and alcohol affect the brain by Dr. Duyilemi Chris Ajonijebu, a neuroscientist and NRT facilitator.

The sessions were interactive and well-received, with over a hundred grade eight learners and staff members in attendance. The team also had a planned visit to Walmer Secondary School on March

The outreach program succeeded in reaching a staggering total of 3,002 learners, leaving a mark on their educational journey. The program's impact was evident through the enthusiastic feedback received from learners, teachers, and district officials. Students expressed newfound excitement for science, citing the interactive activities and hands-on approach as catalysts for their increased interest.

The success of the outreach program was made possible through the participation of several exhibitors who brought science shows and experiments to captivate the audience. The list of exhibitors included prominent organizations such as the NRF-SAASTA, CSIR, SANBI, and UNISA, among others.

The number of students and postgraduates from Vhembe enrolling at Nelson Mandela University has increased over the years, not only in the Faculty of Science but in all faculties. The future goal is for UNIVEN to join Nelson Mandela University in outreach activities in Gqeberha and the Eastern Cape to grow awareness about UNIVEN in this province.



15th, 2023, but unfortunately, the talk could not proceed due to unforeseen supply interruptions. However, the school management has expressed willingness to reschedule the Brain Health Talk for a later date, to be confirmed. It's worth mentioning that Khau Kananelo and Ashleigh Jacobs were also part of the advocacy team that visited the secondary schools.

### Neuroscience Based Seminar

As part of the 2023 BAW activities, a neuroscience-based seminar was held on March 14th, 2023, featuring a talk on "The Potential of Tissue Engineering and Brain Physiology" by Prof. Petra Kluger, a renowned researcher and academic on staff exchange program from Reutlingen University, Germany. The presentation was engaging and followed by an interactive session, attended by Physiology students (mostly *third-year undergraduates, honours, and postgraduate students*), *Human Physiology staff members, other members of the university community, and the Science Marketing Team.*

The organizers extend their gratitude to the managements of Paterson High School and Walmer Secondary School, all the students and staff members of the Human Physiology Department, all the members of the NRT, and the Science Marketing Team for their support in making this project a success.

# Recent STEM Engagement Activities at GMMDC

The Govan Mbeki Mathematics Development Centre (GMMDC) had a number of engagement activities during the second term.

Written by: Prof. Werner Olivier

## **GMMDC provide M-learning resources and STEM Training to Secondary Schools in the Free State**

The GMMDC has recently been awarded a provincial tender to supply its innovative GammaTutor M-learning devices, along with Mathematics and Physical Sciences software, and comprehensive training to ten secondary schools in the Gariiep district of the Free State Province. The deployment of these cutting-edge for mobile learning resources will serve as teaching support within classrooms and establish school-based after-hours offline mobile resource centres.

Additionally, the contract includes the provision of an accredited professional development programme to enhance the skills of 30 in-service Mathematics educators from the project schools over the course of the next 18 months. This initiative, which started in May 2023, is in partnership with the Free State Department of Basic Education. The main project aims are to assist under-resourced schools in acquiring high-quality Techno-Blended STEM resources while fostering the development of a professional learning network of Mathematics educators who actively engage in 21st-century classroom practices.

The ultimate goal is to improve STEM education and ensure learners in the Rural Gariiep District receive a high-quality education that prepares them for the challenges of the modern world.



*STEM Resourcing & Maths Training of Teachers in the Free State in May 2023.*

## **GMMDC wins National Tender from NRF/SAASTA to provide M-learning Devices and STEM Education Resources**

The GMMDC has recently secured a contract with the NRF/SAASTA following a national bid process aimed at procuring quality STEM education resources for schools. The contract entails the supply of 50 GammaTutor M-learning devices, accompanied by Mathematics and Physical Sciences software. Additionally, the GMMDC will provide orientation and training to Mathematics educators, enabling them to effectively utilize the techno-blended models and GammaTutor resources in classrooms. This project aims to support under-resourced Gauteng schools in acquiring high-quality offline Techno-Blended STEM teaching and learning

resources, while also empowering Mathematics educators to actively engage in 21st-century classroom practices. The project is scheduled to commence in Gauteng in July 2023.

## **GMMDC and Market Place Academy Join Forces for a Pilot Mathematics Initiative for National Development of Youth (MINDY) Project in Gauteng**

The GMMDC has recently entered into a contract with Gauteng-based Market Place Academy to support the Maths Initiative for National Development of Youth (MINDY) pilot project in Gauteng. This collaboration involves the provision of Techno-Blended STEM resources and training for offline M-learning support, as well as skills development programs for teachers and learners. The project targets six large under-resourced secondary schools in the Boksburg region of Gauteng and is sponsored by several prominent Financial Institutions in the region. The service contract includes the supply of 50 GammaTutor M-learning devices, accompanied by Mathematics and Physical Sciences resources, accredited training provision for two cohorts of in-service Mathematics teachers, and the introduction of the Centr's Technology Assisted After-school Programme Support (TAPS) for Mathematics learners at the project schools. The initiative, which will initially run over 18 months, commenced in June 2023. Its main objectives are to deliver effective professional skills development to 60 in-service Mathematics teachers from project schools and to enable learners to engage in impactful self-directed STEM learning beyond regular school hours.

## **GMMDC forges a strategic STEM Education Engagement Partnership with TUT**

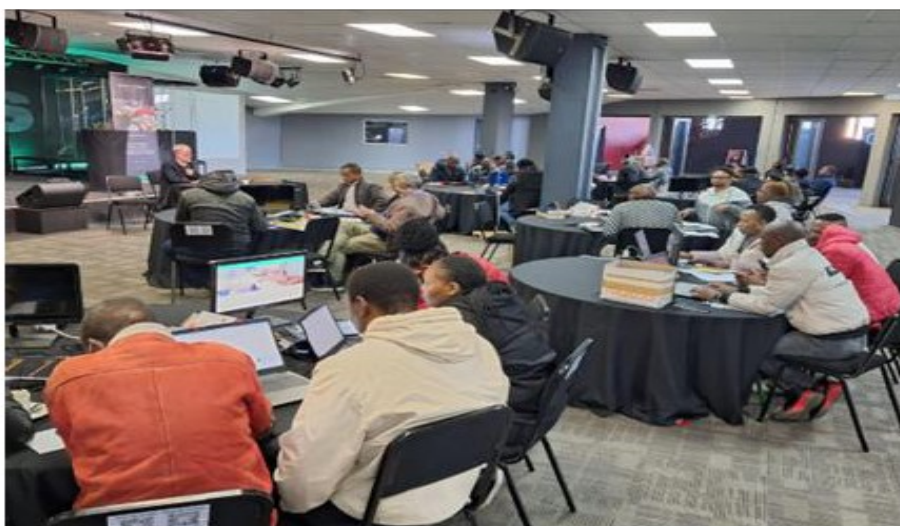
The GMMDC has recently been contracted by Tshwane University of Technology (TUT) to be the service provider for a series of Mathematics, Science, and Technology (MST) support project implementations in three Gauteng schools.

These projects will be rolled-out in the Tshwane region of Gauteng starting from July 2023. The collaboration between GMMDC and Tshwane University of Technology (TUT) management was established through a consultative process over the past year. This included a 2-day visit to the Centre on the Bird Street Campus of the NMU by a group of 8 academics from the School of Education at TUT in April this year. The aim of this visit was to plan collaborative STEM education engagement in under-resourced schools from the immediate catchment area of TUT. The MST school support programme encompasses an accredited professional skills development programme for 30 Mathematics teachers, the provision of innovative Mathematics and Science resources, and the introduction of learner after school support at project schools. Additionally, the School of Education at TUT will actively participate in the programme implementation, ensuring the dissemination and promotion of techno-blended pedagogies and skills among full-time STEM education students, preparing them for future classroom practice. Furthermore, TUT has plans to extend the footprint of this project over the next three years, extending its benefits to more Mathematics and Physical Sciences learners and schools within the Tshwane region of Gauteng.

## **25th Anniversary Engagement Celebrations of University in Oldenburg Germany**

Professor Werner Olivier and Dr. Carine Steyn, two members of the academic staff at the GMMDC, have been invited to join the NMU delegation in attending a week-long series of academic celebrations hosted by the University of Oldenburg in Germany. This event marks the 25th anniversary of international academic engagement collaboration at the University of Oldenburg and is scheduled to take place from June 25th to July 1st, 2023.

Under the leadership of Vice-Chancellor Professor Muthwa and a team of experienced senior



*Training session with MINDY Mathematics teachers in Gauteng on 6 June 2023*

university staff, the NMU delegation will actively participate in various meetings with the primary objective of nurturing ongoing collaboration between the two institutions. These deliberations will also focus on the shared pursuit of Sustainable Development Goals. Furthermore, the GMMDC has been specifically requested to deliver a presentation highlighting NMU's engagement with schools. The planned presentation will emphasize the university's dedicated efforts in the Science Faculty into promote high-quality STEAM education in under-resourced schools.

#### **GMMDC provides STEAM Education capacitation training at WSU**

As part of the AIDC EC STEM engagement partnership in 2023, the GMMDC conducted a two-day STEAM Education capacitation seminar in May 2023 at the main campus of Walter Sisulu University (WSU) in Mthatha. The main objective of this seminar was to provide training and support to WSU staff, selected senior education students, and in-service teachers involved in WSU's STEM engagement projects with secondary schools. The aim was to enhance their proficiency in utilizing GMMDC's integrated technoblended support programs (ITSP) specifically developed for mathematics and physical sciences in under-resourced secondary schools. The opening of the two-day seminar was overseen by Dr. B Z Gobingca, the Dean of Educational Sciences at WSU. The training sessions were facilitated by three members from GMMDC, encompassing various activities such as demonstrations, interactive GammaTutor training, resource distribution, project discussions, and reflections on the STEAM education models for teacher and student support.

Feedback from the participating staff, students, and in-service teachers from WSU following the seminar was consistently positive. They expressed deep appreciation for the models and valuable digital materials provided, recognizing their significance in addressing the critical needs of STEM education in under-resourced schools within the province.

#### **Visiting Fellow Grant awarded to Director of GMMDC by the University of Jyväskylä (JYU) in Finland**

The University of Jyväskylä (JYU) has recently awarded the 2023 Visiting Fellow Research Grant to Prof. Werner Olivier, the Director of the GMMDC. This competitive grant has been awarded to facilitate Prof. Olivier's research and development endeavors in the field of STEAM Education. The duration of the visit is set to span two months, specifically from mid-August to mid-October 2023.

Throughout this visit, a diverse array of academic activities pertaining to STEAM Education ,will be conducted with STEM teachers and learners from Finnish schools. A second staff member of the GMMDC, Dr. Carine Steyn, will join the visit JYU for two weeks in September 2023. Prof. Olivier and Dr. Steyn will collaborate closely with Dr. Kristof Fenyvesi, a senior researcher at JYU, who has actively engaged in collaborative STEAM research and engagement projects with the GMMDC for a period exceeding five years.



*STEAM Education Capacity Training of Staff & Students at WSU in May 2023*

## **IYBSSD Talk**

# **Voyager and the Outer Planets: Unveiling the Secrets of Our Solar System**

**Math Club recently organised a talk titled "Voyager and the Outer Planets: Combination of Mathematics, Physics, Computing, Data Science, and Engineering." The event was held under the banner of the International Year of Basic Sciences for Sustainable Development (IYBSSD).**

During the talk, Dr Martin Weigt, a senior lecturer in the Mathematics department, shed light on the fascinating realm of outer planets and the ground-breaking Voyager spacecraft mission conducted during the 1970s and 1980s. This mission played a crucial role in revolutionising the attendees understanding of the outer planets within the solar system. The talk emphasized the vital role played by basic sciences, such as mathematics and physics, in ensuring the success of the Voyager mission. Dr Weigt highlighted the interplay between these foundational sciences, data science, and engineering, showcasing their collaborative efforts.

Several intriguing topics were explored during the talk, including the concept of where space begins, the significance of studying the cosmos, Kepler's Laws, Newton's Law of Gravitation, and the development of calculus. The focus remained on the mission to the giant planets through Voyager 1 and 2, encompassing a comprehensive exploration of the outer planets.

The talk remained true to the theme of the International Year of Basic Sciences for Sustainable Development, as it underlined the importance of basic sciences in achieving a balanced, sustainable, and inclusive development of our planet. By delving into the wonders of the outer planets and the contributions of mathematics, physics, computing, data science, and engineering, the talk left attendees with a deeper appreciation for the intricate relationship between scientific disciplines and our quest for knowledge about the universe.

# Forestry, Wood Technology, and Veldfire Management Special Awards Ceremony

The Nelson Mandela George campus recently organized a special awards ceremony to recognize the outstanding individuals in the fields of Forestry, Wood Technology, and Veldfire Management.

"We are proud to acknowledge and celebrate the outstanding achievements of our students at Nelson Mandela University. Today, we commend your unwavering commitment, hard work, and resilience throughout your journey to acquire your qualifications. As you embark on new paths, we urge you to uphold the values of our esteemed institution and serve as responsible ambassadors, bringing honour to the Nelson Mandela University name in your workplaces and the communities you will impact," stated Tiaan Pool, Head of the Forestry Department.

Within the Forestry Diploma program, Benjamin Ringwood stood out as the recipient of the award for the best student in Forest Engineering, Forest Management, and Fire Management modules. Additionally, Mushaisano Ndou and Sandisiwe Langman were recognized as the top performers in the Silviculture and Human Resource Management modules, respectively.

In the Wood Technology Diploma program, Mponeng Pina was honoured as the best student in Timber Seasoning, while Iviwe Dangazela received recognition for excellence in Timber Processing. Moving on to the Higher Certificate in Veld Fire Management, Hlobisile Madlala and Amanda Rodo were both acknowledged as the top students in their respective fields.

Furthermore, we extend our appreciation to the exceptional members of the Nelson Mandela Forestry Association committee for their outstanding leadership in 2022. Avelile Ciske, Lelonathemba Ndaleni, Ronewa Sathuma, and Minenhle Machi demonstrated remarkable excellence in their roles.

We applaud each of these individuals for their remarkable accomplishments and extend our heartfelt congratulations on their well-deserved recognition. May their achievements serve as an inspiration to the entire Nelson Mandela University community."



*These are the top performers and staff members in Forestry, Wood Technology, and Veldfire Management at Nelson Mandela University*

## YeboTutor Tour Promotes Education in OR Tambo District

Written by: Vuyani Chipunza

From the 12th to the 15th of April 2023, the YeboTutor program organized a tour in the OR Tambo district to promote education and provide support to learners in disadvantaged communities.

The tour visited several schools, including Tandanani Senior Secondary School, Mangala Senior Secondary School, Jongelizwe Senior Secondary School, Tsolo High School, Lutuka Senior Secondary School, Khanyisa High School, and Zwelodumo Senior Secondary School. The tour was a great success, reaching out to a large number of learners and community members.

The YeboTutor program team, which included Aseva Volinye, Hlongwe Lwazi, Tebogo Sebake, Doctor James Jena, and the coordinator Vuyani Chipunza, started the tour at Tandanani Senior Secondary School. During the YeboTutor Tour in the OR Tambo district, the learners were provided with tutoring in Mathematics, Physics, and Chemistry, which are the most crucial subjects forming a significant part of the STEM subjects. The YeboTutor program believes that these subjects are essential in preparing learners for careers in Science, Technology, Engineering, and Mathematics.

The YeboTutor team provided learners with interactive sessions that made learning fun and engaging. The learners were encouraged to ask questions and participate actively in the lessons. The tutors provided learners with practical examples and exercises to help them understand the concepts better. They also gave the learners study material and resources to help them prepare for exams and tests.

The YeboTutor team's efforts to teach these subjects were well received by the learners and school teachers, who expressed their appreciation for the support. The YeboTutor program believes that by providing learners with the necessary support and resources, they can achieve their academic goals and become successful in their chosen careers.

The YeboTutor program was presented to learners in different schools, providing them with information about the program's resources and benefits. The learners showed excitement about the program and expressed their interest in signing up. During the Q&A session, they asked questions about the program's functionality and emphasized the importance of education and how the program can help them achieve their academic goals. The team stressed the importance of education and how the program can provide learners with the support they need.

In conclusion, the YeboTutor Tour in the OR Tambo district was not only an opportunity to promote education and provide support to learners but also to provide them with tutoring in crucial subjects such as Mathematics, Physics, and Chemistry. The YeboTutor program believes that by providing learners with support and resources in these subjects, they can achieve their academic goals and become successful in their future careers.



# Colourful Chemistry: iGEMS visits the NMU Chemistry Department

Written by: Mrs Jennifer Pienaar from the SSE department in the Faculty of Education

**On Wednesday, 05 April 2023, the Chemistry department hosted eighteen Grade 12 learners from iGEMS (Incubating Great Engineering Minds) who participated in Science Bootcamp as part of their holiday program.**

The goal of Science Bootcamp, hosted by Mrs Pienaar from the Faculty of Education at Nelson Mandela University, is to make Science “come alive” through hands-on active learning experiences. The topic of acids and bases is assessed in the Grade 12 year-end Physical Sciences chemistry exam paper and while students may have good content knowledge of acids and bases, they do not always understand the application or meaning of the calculations they are performing. The aim of the session was to expose learners to a real Science lab and for them to perform an acid-base titration themselves to help them discover the link between what they do in the classroom and the real-life application thereof.

Under the Unity in Africa banner, iGEMS, an education-to-employment initiative, is a 4-phase model which aims to create employable engineers, a programme that speaks directly to industry. They give youth the opportunity to enhance their education and transition through an internship year and onto tertiary education with possible employment once they graduate.

The day started with a lot of excitement when the learners got to put on their lab coats and safety goggles before entering the lab. This made them feel like real Scientists. The two-hour session was led by Mr Sam Bosman and Ms Nozuko Mtwla. Mr Bosman started the session by introducing the Grade 12 learners to general features of the lab, important safety rules and they were shown the uses of some basic lab equipment. For most students, this was their first time in a Science lab and their first time handling lab equipment.

Mr Bosman went on to amuse the learners by demonstrating the colour changes of various indicators with general household items. While demonstrating the various colour changes, he challenged them with higher order questions like “why do you think universal indicator turned from purple to green to yellow and finally colourless when we added bleach?”. He used a practical inexpensive example of acids and bases when he showed them the colour changes that red cabbage water undergoes and explained to them that they can easily perform the experiment at home. Mr Bosman also gave them a real-life example of the effect of the pH of the soil when we look at the colour changes of the *Hydrangea macrophylla* flower, commonly known as a Krismisroos or a Christmas rose.

The Chemistry faculty made it possible for each of the eighteen students to perform their own individual acid-base titration for the reaction of oxalic acid with sodium hydroxide where students were thrilled to observe the colourless phenolphthalein turn bright pink as the reaction reaches the endpoint. Ms Mtwla led the learners step-by-step through the experiment, ensuring that each student followed along and no-one was left behind. Ms Mtwla presented the content knowledge on a level that the learners could understand, addressing any misconceptions they might have had. She encouraged those who felt overwhelmed by the experience at the start of the session and was able to guide them to the point where they finished the practical with confidence and a smile on their faces. The faculty made four demis available to assist the learners during the labs, ensuring that each learner receives assistance when needed and that their questions were answered when they felt uncertain.

The session ended with Ms Mtwla performing a few titration question calculations with the learners based on the practical they had just performed, explaining to them that they will each get a slightly different value as the measurements of volume they took from the burette are not all the same. This made learners realise that there is a link between the acid base calculations they do in the classroom and the real application thereof.

When asked what the students enjoyed most, they said wearing lab coats, observing the colour changes of the indicators and performing the experiment themselves, something most of them had never done before.

We would like to thank the Chemistry department, especially Dr Ogunlaja, the HOD of the faculty, for making it possible for us to gain access to the Chemistry laboratory. We also thank Mr Bosman and Ms Mtwla for availing themselves in support of Science Bootcamp. Each of you made Science “come alive” for these students. It was an extremely valuable and enriching experience for each learner that they will carry with them into their final year of schooling, future studies and careers.

**“Make science come alive through hands-on active learning experiences”**



*A busy chemistry lab - just look at the concentration on their faces as the iGEMS Grade 12 students perform titrations.*



*Smiles all around as the session ends. Mr Bosman from the Chemistry department and Mrs Pienaar from the Faculty of Education.*

**iGEMS**  
Incubating Great Engineering Minds

**Science  
BOOTCAMP**

A program offered by Curriculum Guru®

# Inspiring Science Careers at the Cala Career Exhibition 2023

The Cala Career Exhibition 2023, organized by the Centre for the Community Schools in collaboration with the Cala Community of schools, provided a remarkable platform for the Faculty of Science at Nelson Mandela University to inspire and engage young learners in science-related fields. As an invited exhibitor, the Faculty of Science played a pivotal role in promoting science education and encouraging students to pursue rewarding careers in the scientific domain.

The event, held on 26 May 2023, showcased the commitment of both organizations to empower community schools and equip learners with the necessary knowledge and opportunities for tertiary education.

Drawing the attention of 551 Grade 12 learners from eight schools within the Cala Circuit, the Career Exhibition facilitated a vibrant exchange between students and exhibitors. The Faculty of Science showcased the wide array of science programs available at Nelson Mandela University. Through engaging exhibits, informative brochures, and interactive sessions, learners had the opportunity to explore different science disciplines, ask questions, and gain insights into the exciting prospects awaiting them in the scientific world.

The successful collaboration between the Centre for the Community Schools and the Faculty of Science demonstrates the power of partnerships in fostering educational opportunities and shaping the aspirations of young learners. As the Faculty of Science continues to inspire the next generation of scientists and innovators, events like the Cala Career Exhibition serve as a testament to the transformative power of science education.



*The Science Marketing Team (SMT) alongside DVC for Learning & Teaching: Dr. Muki Moeng at the Cala Career Exhibition.*

## Faculty of Science Hosts Successful Postgraduate Orientation Program

Nelson Mandela University's Faculty of Science organized a highly successful postgraduate orientation program, aimed at providing valuable information and support services to postgraduate students at various levels of study. The program, which catered to Honours, Masters, PhD, and Postdoctoral students, was designed to equip them with the necessary tools and knowledge to thrive in their academic pursuits.

The orientation program featured esteemed facilitators Ms S'Busisiwe Vilakazi and Dr Nokuthula Magida-Matomela, who guided the students through a series of informative sessions. Additionally, several guest speakers were invited to share their expertise on a wide range of topics relevant to postgraduate studies at Nelson Mandela University (NMU).

One of the key highlights of the event was a session dedicated to Research at NMU. The students gained valuable insights into the university's research policies and were introduced to the Research Support and Development (RCD) team, which provides essential guidance and resources for postgraduate students. Furthermore, the Innovation Office Support presentation shed light on the various opportunities available for students to develop their innovative ideas and transform them into impactful projects. Recognizing the increasing importance of internationalization in research, the program also addressed the processes and support available for international students. The session emphasized the university's commitment to fostering a global research community and creating a welcoming environment for international scholars.

The Faculty of Science further emphasized its dedication to research excellence by presenting its research strategy and outlining the research-related processes. Students were acquainted with the ethical considerations surrounding research and the importance of adhering to ethical guidelines throughout their academic journey. To foster collaboration and interaction among postgraduate students, the Faculty introduced the Science Postgraduate Students Forum (SPSF). This platform will serve as a forum for sharing ideas, discussing research challenges, and

building networks among students pursuing postgraduate studies within the Faculty of Science.

The orientation program witnessed an overwhelming turnout of postgraduate students, eager to learn from the distinguished speakers and engage in meaningful discussions. The event was hailed as a resounding success, thanks to the quality of information delivered and the enthusiasm displayed by both the students and the presenters. Through this orientation program, the Faculty of Science demonstrated its commitment to supporting postgraduate students in their academic journey. By equipping them with vital information, resources, and networking opportunities, the faculty aims to empower its students to excel in their research endeavours and make meaningful contributions to their respective fields.

With the Faculty of Science's unwavering commitment to nurturing the next generation of researchers, the future looks promising for postgraduate students at Nelson Mandela University Faculty of Science.



# Curriculum Renewal Symposium

The Faculty of Science at Nelson Mandela University is in the process of renewing its curricula. The new Faculty of Science structure and strategy has provided an opportunity to examine the direction of our programmes and how they can be renewed.

The faculty vision is to be a world-class, engaged, and transdisciplinary African Faculty of Science that can respond to socio-economic and environmental challenges in society. Our mission is to ensure that our science programmes reflect that vision and provide a diverse range of life-changing pure and applied science-based learning experiences.

In light of this vision, on the 19th and 20th of June, the Science Faculty held a symposium to discuss the curriculum renewal process. The first of the two days of the symposium included a range of presentations by internal and external experts focusing on key areas that will need to be carefully considered during the curriculum renewal process. These presentations ranged from important theory to consider such as critical and humanising pedagogy, to AI and how this will affect education, to the preservation of basic science disciplines, to trans-and-multidisciplinary work, and finally to the future of work and how we will need to consider the current employment climate and skills shortages in all our programmes.

The second day of our symposium held presentations followed by rigorous discussion by programme coordinators, academic staff representing their departments on the issue of re-curriculation, and student and alumni perspectives. There were also discussion sessions including our Science Entities and Service Faculties and how they would like to be involved in this process and see our programmes evolve. A multitude of issues were identified, key amongst them was that a greater focus will be needed on “soft skills” such as communication, self and project management, problem-solving and analytical thinking, empathy and teamwork, and digital literacy. With core issues and key considerations identified the Science Faculty will be moving forward with the curriculum renewal process. A full report will be provided to all the stakeholders in due course.



*Deputy Dean: Prof Zenixole Tshentu presenting during the Curriculum Renewal*



*Faculty of Science Curriculum Renewal Participants at the North Campus Conference Centre*



# A scholarship of Teaching and Learning in Chemical Process Technology

In 2022 Dr Shawn Gouws was the recipient of the Nelson Mandela University Distinguished Teacher Award. Dr Gouws asserts that chemical process operator skills are scarce in South Africa, and that it is critical to establish a foundation of knowledge for students who are trained to solve problems.

Dr. Gouws exposes his students to simulations and practical experiments that enable them to understand the principles of the task. Colleagues and stakeholders commented in support; "This is a fantastic achievement in academia and a testament to your hard work"-Teaching Colleague. Within this, he produced an article that was published in an international peer-reviewed Elsevier journal (S. Gouws, Teaching for chemical process technicians, Education for Chemical Engineers, 2022, vol , pp 6-14, <https://doi.org/10.1016/j.ece.2022.01.002>).

He then attended 44th South African Chemical Institute (SACI) Convention held in Stellenbosch (8 -13 Jan 2023) and presented a paper entitled "Digitalize learning via process simulation to understand process control". The paper was well received by the chemical community. In this research presentation it was discuss how the Diploma Chemical Process Technology students benefit from process simulations about process start-ups and abnormalities in a process plant to mitigate potential problems.

From the formal course and placement of Diploma Chemical Process Technology students in industry the question arises on how to train current employees that cannot study further due to work obligations. This led to the development of 3 short learning programmes.

The SLP's developed were for "Basic Chemistry for operators", "Basic Chemical Engineering for Operators" and "Process Safety". The Basic Chemical Engineering for operators and Process Safety were both accredited through the Engineering Council of South Africa (ECSA). This forms part of continuous professional development (CPD -points) for a professional employee. The best part was to offer this course once again face-to-face in an industry environment coming through the worst 2 years of isolation because of Covid-19.

**"This is a fantastic achievement in academia and a testament to your hard work"**



**Nelson Mandela University Distinguished Teacher Reward recipient: Dr. Shawn Gouws**

These thoughts then led to discussion on how to disseminate knowledge into a book format. We are currently pondering on the idea and concepts around a scholarly book dealing with "A scholarship of Teaching and Learning in Chemical Process Technology".

This book intends to address the following:

- Intersecting aspects of learning and teaching chemical process technology, to highlight how a humanising pedagogy is implemented for student access and success. This is done by unpacking teaching administration elements such as: admission and selection processes, as well as curriculum elements such as teaching large classes, technical skills development as well as effective communication.
- Reflecting on the introduction to chemical process technology – a programme taught in theory and hands-on approach to illustrate various industry and chemical engineering concepts.

The book is supported by the HOD: Chemistry - Dr Ogunlaja, LT Collab – Dr Toni and is being Coordinated by Ms Viwe Ndayi.



**Students receiving their SLP certificates at Heraeus.**



Change the World

**"Education is the most powerful weapon which you can use to change the world"**

# Celebrating Excellence Awards: Faculty Award Recipients

Nelson Mandela University's annual student Academic Awards ceremony was held on 28 November 2022 together with the VC's Excellence Awards for staff. We would like to acknowledge and congratulate both staff and student top achievers in the Faculty of Science.

**First-year undergraduate degree award**  
Tamaryn Wagner-Welsh (Bachelor of Science)

**First diploma award**  
Hanro van Rooyen (Diploma in Game Ranch Management)

**First degree award**  
Erich du Plessis (Bachelor of Science)

**Institutional award for the best Honours graduate in the Science, Engineering and Technology field**  
Bouwer Botha (Bachelor of Science Honours in Computer Science and Information Systems)

**Institutional award for the best Master's graduate by dissertation in the Science, Engineering and Technology field**  
Eleesha Annear: Master of Science (Zoology)

**Best first diplomate Vice-Chancellor's Excellence Award**  
Hanro van Rooyen

**Best postgraduate Vice-Chancellor's Excellence Award in the field of Science, Engineering and Technology**  
Eleesha Annear

**Innovation Excellence Project award**  
Percy Hlangothi and team for the Centre for Rubber Science and Technology project.

**Faculty of Science Excellent Teacher of the Year**  
Richard Betz

**Learning and Teaching Excellence Team award**  
Yebo Physics Team

**Faculty of Science Emerging Researcher of the Year**  
Anina Coetzee

**Faculty of Science Researcher of the Year**  
Janine Adams

**Nelson Mandela University Distinguished Teacher award**  
Shawn Gouws

# New Staff: New Science Marketing Team



**Ms. Kaylan Hendricks**  
PR & Marketing Coordinator



**Mr. Sandile Manyoni**  
PR & Marketing Coordinator

## Get in touch with us



Nelson Mandela University Faculty of Science



@ScienceMandela



science\_mandelauniversity



Nelson Mandela Uni Faculty of Science

For any interesting articles related to Science that you would like featured in our newsletter please contact:  
[science.marketing@mandela.ac.za](mailto:science.marketing@mandela.ac.za)



PO Box 77000, Nelson Mandela University, Port Elizabeth, 6031.  
T +27 41 504 1111 (Port Elizabeth) T +27 44 801 5111 (George)  
E [info@mandela.ac.za](mailto:info@mandela.ac.za) [mandela.ac.za](http://mandela.ac.za)

**Change the World**