NELSON MANDELA
UNIVERSITY

Graduation 2019

Ceremony 7: Faculty of Science
(School of Computing Sciences, Mathematics, Physics and Statistics
and School of Biomolecular and Chemical Sciences)

Tuesday, 9 April 2019, 09:30
Madibaz Indoor Sport Centre, South Campus, Summerstrand

100 YEARS OF MANDELA

VISION

To be a dynamic African university, recognised for its leadership in generating cutting-edge knowledge for a sustainable future

MISSION

To offer a diverse range of life-changing education experiences for a better world

VALUES

Excellence
Diversity
Ubuntu
Social justice and equality
Integrity
Environmental stewardship

Contents

Respect for the occasion

As befitting of this milestone occasion and in respect of all graduates and their families, please could you honour the following:

- All rise and applaud the student procession as it enters the back of the hall.
- All rise when the academic procession enters the hall and remain standing until after the moment of silence and again at the end of the ceremony, after the singing of the national anthem as the academic procession leaves the hall.
- Ensure that your cellphones are on silent.
- Do not walk around the hall or leave during proceedings. Should you need to use the bathroom, please go to the back of the hall where ushers will direct you.
- Ensure that you momentarily suppress your applause while the name of each candidate is announced.

A graduation reflective of our namesake

Our university is on a transformation journey, ever seeking to advance social justice, equality and inclusion by providing life-changing educational experiences in pursuit of a better life for all.

Part of our journey in honouring our namesake, is examining what we celebrate and how we do it.

Graduation is the pinnacle of our institutional celebrations – a time when we reflect, acknowledge and celebrate the capping of each and every student.

What you will witness today is the beginning of this graduation transformation journey as we introduce what our students, past and present, our staff and others, feel is apt and fitting of a dynamic African university that carries the iconic name of Nelson Mandela.

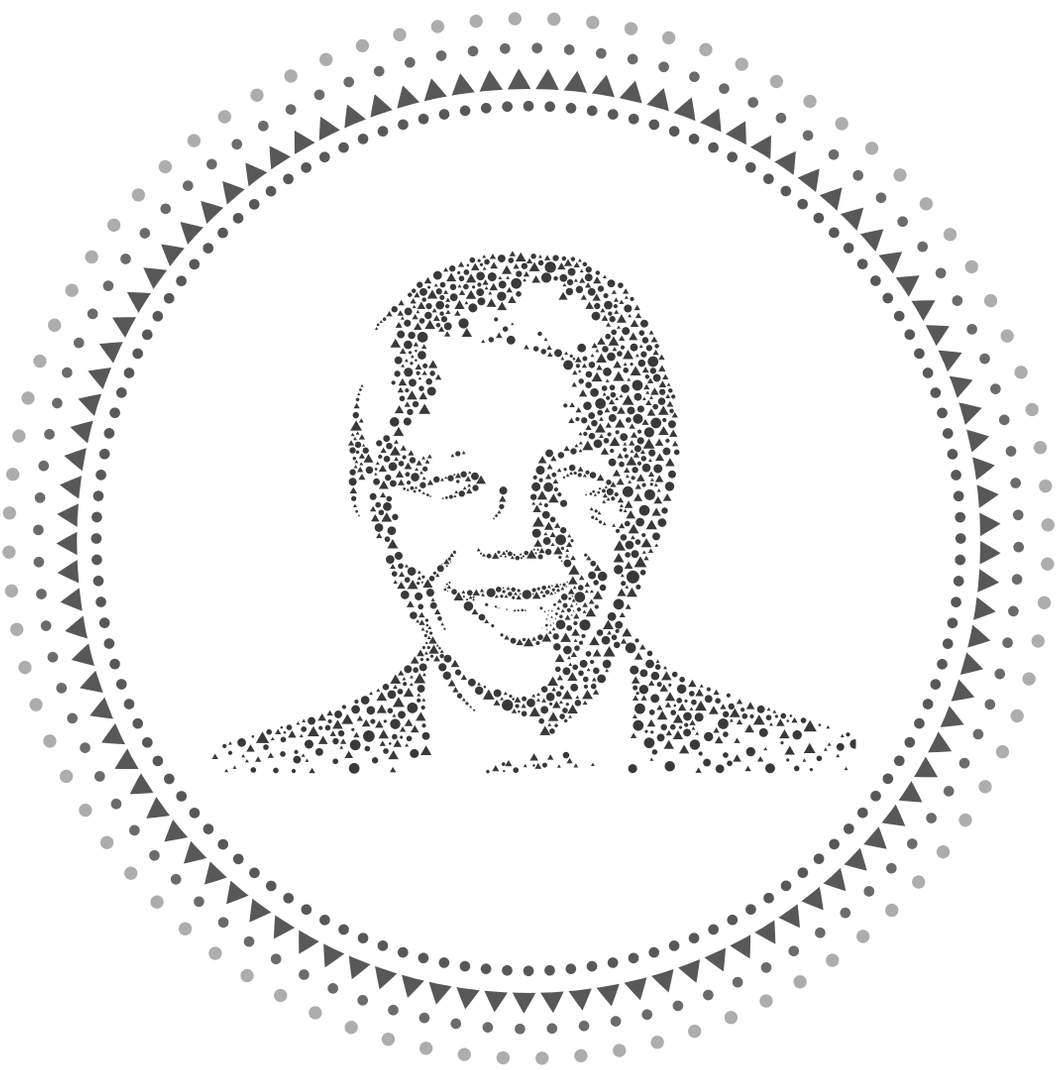
This follows a nine-month process that included online surveys, focus groups and discussions around our university's identity and the rituals, dress, entertainment, format and practices that our graduation ceremonies should aspire to reflect.

This enriching experience has resulted in a number of co-created innovations for Mandela University – such as the first procession by all graduates into the hall and the addition of a cultural interlude during each ceremony.

Other visual and process adaptions to the previous ceremonies include the addition of a sign interpreter, processional drumming and a new ticketing system.

The latter is a legislative regulation as the university must comply with the public events act in terms of safety and security. To accommodate those who were not privy to receiving a ticket (each graduate is entitled to four tickets), live streaming of the event is screened in an adjacent venue.

The process of introducing new academic gowns for office bearers that are reflective of our identity as Nelson Mandela University is also underway.



Congratulatory message

Graduation is a significant milestone in anyone's life. It is the culmination of an academic journey that reflects your commitment, perseverance, hard work, intellect and sacrifice. We know that the sacrifice and hard work is often not yours alone as many have travelled with you – your friends, your lecturers, your supervisors, your mentors and your family. They have invested in you financially, encouraged you to persevere, guided your studies and above all, believed in your ability to succeed and achieve this graduation dream.

Today your joy is our joy too. Such a significant moment – your graduation day – must be celebrated for it not only recognises all that you have achieved, but focuses on all the potential and possibilities to come. It offers us great hope for the future – for you are that future.

We salute and applaud your achievement and wish you all the very best for your future endeavours.

Never stop learning. Do not let your curious spark die out, for education is not only your passport to the future – but also to the future hopes of our country, our continent and is indeed a foundation for a better world, as Nelson Mandela so eloquently put it:

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

Congratulations!

Dr Geraldine Fraser-Moleketi
Chancellor

Professor Sibongile Muthwa
Vice-Chancellor

Ilizwi lokuvuyisana

Uthweso-sidanga yimpumelelo ebalulekileyo kubomi bomntu wonke. Ziziphumo zokufika apho ubusiya khona, ezibonakalisa ukuzimisela nokuzinikela kwakho, ukunyamezela, ukusebenza nzima nobungqondi. Siyazi ukuba ukuzinikela nokusebenza nzima asikokwenu nodwa, njengoko siqonda ukuba bebebaninzi abantu abanikhaphileyo kolu hambo - izihlobo, abahlohli, amakhankatha emfundo, abaxhonkxi kwakunye nezizalwane nezalamane. Baye benza indima ngokuthi bafake isandla ngemali, banikhuthaza ukuba ninyamezele, banibonisa indlela xeshikweni niqhuba nezifundo zenu, ngaphezu koko konke, baye bakholelwa kwiinzame zenu zokuphumeza amaphupha okuba nesidanga.

Namhlanje olu vuyo lwenu ikwa lolwethu, iintliziyo zenu nezethu zidada emafutheni yimincili nochulumanco - eli thuba libaluleke kangaka, usuku lwakho lokuthweswa isidanga - mayibe lusuku lokubhiyoza njengoko ingelosuku olubonisa impumelelo kuphela, kodwa lujolise kuko konke okuzayo nokuyimpumelelo. Lusinika ithemba elimangalisayo lengomso- nina nilikamva nengomso.

Sinothulela iminqwazi sikwaniqhwabela nezandla ngale mpumelelo yenu, sininqwenelela okuhle kuko konke enikwenzayo nokuzayo.

Ningaze niyeke ukufuna ulwazi. Ningahl'umxhelo weenzame nemigudu zokufun'ulwazi, njengokuba imfundo ingesositshixo sekamva kuphela – koko ikwayiminqweno yekamva yelizwe nezwekazi lethu kwaye sisiseko sehlabathi eliqaqambileyo, njengokuba uNelson Mandela eyibhentsisa ngobuciko:

Imfundo sesona sixhobo sinamandla ongasisebenzisa ukuguqula ihlabathi.

Hu-u-untshu!!!

Ukwanda kwaliwa ngumthakathi.

Boodskap van gelukwensing

Gradeplegtigheid is 'n belangrike mylpaal in enigiemand se lewe. Dit is die hoogtepunt van 'n akademiese reis wat jou toewyding, deursettingsvermoë, harde werk, intellek en opoffering weerspieël. Ons weet dat die opoffering en harde werk dikwels nie net joune was nie, aangesien baie mense saam met jou die pad geloop het - jou vriende, jou lektore, jou toesighouers, jou mentors en jou gesin. Hulle het finansieel in jou belê, jou aangemoedig om te volhard, jou studies gelei en bowenal geglo in jou vermoë om te slaag en hierdie droom om te gradueer te bereik.

Vandag is jou vreugde ook ons vreugde. Jou gradedag is so 'n belangrike oomblik en dit moet gevier word – nie net omdat dit erkenning gee aan alles wat jy bereik nie, maar ook fokus op al die potensiaal en moontlikhede in die toekoms. Dit bied ons groot hoop vir die toekoms - want jy is daardie toekoms.

Ons wens jou geluk en is saam met jou verheug oor jou prestasie en ons wens jou net die beste toe vir jou ondernemings in die toekoms.

Moet nooit ophou leer nie. Moenie toelaat dat die ondersoekende vonk in jou geblus word nie, want opvoeding is nie net jou paspoort vir die toekoms nie, maar ook vir ons land se hoop vir die toekoms en ons vasteland en dit is inderdaad 'n grondslag vir 'n beter wêreld, soos Nelson Mandela dit so welsprekend gestel het:

"Opvoeding is die kragtigste wapen wat jy kan gebruik om die wêreld te verander."

Veels geluk!

About Nelson Mandela University

Nelson Mandela University is the only university in the world to carry the name of Nelson Rolihlahla Mandela.

With this honour comes the responsibilities of leading our university into a new era of transformative innovation, development and change in line with the ethos and values of our namesake.

Living the legacy of Mandela should be reflected in the way we teach, learn, do research, engage with our partners, and work, study and live as staff, students and alumni.

We are on a journey to achieve this and become the learning destination for staff and students who:

- Are pioneering change agents for a better world;
- Are committed to creating jobs in an entrepreneurial economy;
- Work together across disciplines in seeking solutions and innovations to achieve quality of life and a health environment for all people'; and
- Are instilled with a deep need to serve and give back.

Fast facts

CAMPUSES
7

(North, South, Ocean Sciences, Second Avenue (in Summerstrand), Missionvale (Missionvale), Bird Street (Central), George (George in the Garden Route)

470
PROGRAMMES
(from certificate through to doctoral qualifications)

27 748
STUDENTS

7 FACULTIES
(Arts; Business and Economic Sciences; Education; Engineering, the Built Environment and IT; Health Sciences; Law and Science)

6 STRATEGIC PRIORITIES
- Student access and success
- Resource stewardship
- Engaged innovative scholarship
- Transformative institutional culture
- Talented high-performing staff
- Enabling systems, processes and infrastructure

2 460
PERMANENT EMPLOYEES

6 STRATEGIC RESEARCH AREAS

8% OF STUDENTS COME FROM 75 DIFFERENT COUNTRIES

Exciting prospects

Ocean Sciences Campus
Our new generation university is set to become the leading "go-to" destination in Africa for all marine and maritime teaching, learning, engagement, innovation and research at postgraduate level.

This follows the launch of the Ocean Science Campus in Summerstrand in September 2017 as part of the university's strategic drive to unlock the potential of the blue economy in a sustainable manner to benefit all South Africans.

The development and expansion of our academic programmes will offer new opportunities to all South Africans.

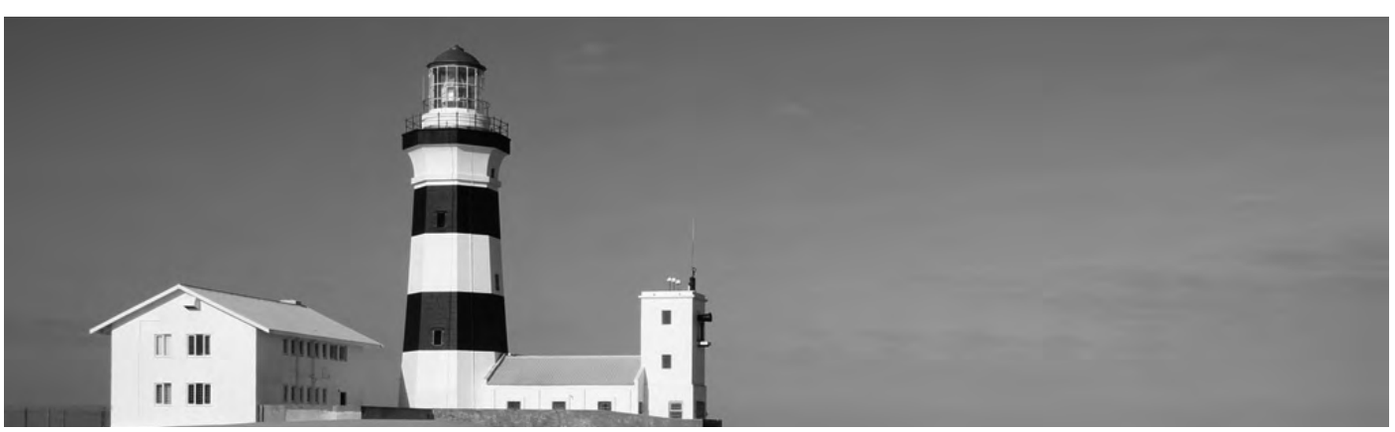
Intentional design
The new campus at the former CSIR offices has been intentionally designed and revamped to embrace a transdisciplinary way of working. It has also been specifically branded to reflect its purpose – that of a dedicated creative and innovative hub for postgraduate studies, and its physical spaces revamped to allow scientists from all disciplines to work as teams.

Partnerships
This transdisciplinary research strategy does not stop with the academic project. Instead, it also seeks to embrace a 'blue commons' partnership with the metro, local government, big business, civic society and all those who live, work and play at the water's edge and the oceans. It also includes several international partner universities.

By bringing all players together, all basic, formative and applied professional knowledge competencies in Ocean Sciences are exposed, developed and shared in novel ways.

Strategically, this approach offers better options for both discovery research and that of solving real world problems arising from economic need, while always ensuring ecological sustainability.

The university is working on a number of key projects that will strategically position us as an institution of choice for both staff and students.



A new medical school
The first phase of the university's exciting journey towards the establishment of the country's 10th Medical School is gaining momentum.

Refurbishment of some buildings on Missionvale Campus is underway as well as the procurement of state-the-art equipment for teaching, learning and research in anticipation of hosting the university's first cohort of 100 medical students.

Various accreditation processes need to be completed – such as approval by the Health Professions Council of South Africa (HPCSA) to teach the MBChB degree in terms of its curriculum, infrastructure and supporting equipment – before the university can officially open the student application process.

Innovative teaching model
The university will be using an innovative transformative distributive teaching model that will see students come together to study across health science disciplines and leverage the benefits of technology – all towards their service to society, especially within the metro.

The transformative interprofessional education model (IPE) will see doctors work and study alongside nurses, radiographers, psychologists, environmental health practitioner, pharmacists, emergency medical care students and the like, to offer holistic and integrated health care.

The Faculty of Health Sciences led by Executive Dean Professor Lungile Pepeta has already introduced the transformative model with great success with both students and the communities benefitting from the ongoing partnerships.

The faculty's health care ethos is preventative rather than curative given the dire shortage of qualified health professionals in South Africa. At present, 65% of all public doctor's posts are vacant and there is only one doctor to every 4230 people in the Eastern Cape.

Driving the process
A Medical School Infrastructure Working Group is driving the hugely complex implementation plan that also takes the future of Missionvale Campus into account. The campus is in close proximity to Dora Nginza Hospital and a number of clinics.

'Health cannot be a question of income; it is a fundamental human right'

Office-Bearers of the university

Chancellor
Dr GJ Fraser-Moleketi: MAdmin (UP), DPhil (hc) (NMMU)

Chairperson of Council
Ambassador NP January-Bardill: Cert in Ed (UBL), Dip HR Mgt (Damelin), BA (UBL), MA (Essex, UK)

Vice-Chancellor
Prof SW Muthwa: BA (SW) (Fort Hare), BA (SW) Hons (Wits), MSc, PhD (London University, UK)

Deputy Vice-Chancellor: Institutional Support
Mr LE Hashatse: B (Journ & Media Studies), BAHons (RU), MA (Edith Cowan, Australia)

Deputy Vice-Chancellor: Research and Engagement
Prof AWR Leitch: BSc, BScHons, MSc, PhD (UPE)

Deputy Vice-Chancellor: Teaching and Learning
Prof DM Zinn: BA, BAHons, HDE (UCT), MEd, DEd (Harvard University, USA)

Executive Director: Finance
Mr MR Monaghan: BCom (UPE), BComHons (UNISA), Professional Accountant (SA)

Executive Director: Human Resources
Ms VN Bam: BSocSc (UCT), PGDip (UFH), MBL (UNISA)

President of Alumni Association
Mr Kwezi Blose: BSc (Building Economics), BScHons (QS) (UPE)

Executive deans of faculties

Arts
Prof MJR Boswell: BSocSc, BSocScHons, MSocSc (UCT), PhD (Vrije Universiteit, Netherlands)

Business and Economic Sciences
Prof HR Lloyd: BCom, BComHons, MCom, DCom (UPE)

Education
Dr SF Moeng: BA, HDE, BEdHons (UPE), MSc (St Cloud State University, USA), DEd (NMMU)

Engineering, the Built Environment and Information Technology
Dr OSW Franks: BSc (MechEng), MInd Admin (UCT), Hons (B&A) (US), PhD (Engineering Science)(USF – USA), Pr Eng

Health Sciences
Prof L Pepeta: MBChB (Unitra), FCPAED (SA), DCH (SA), MMed (Wits)

Law
Prof A Govindjee: BA, LLB (RU), LLM (UPE), LLD (NMMU)

Science
Prof A Muronga: BSc, UED (UNIVEN), BScHons, MSc (UCT), PhD (University of Minnesota, USA)

Dean of Teaching and Learning
Prof CD Foxcroft: BA, BAHons, MA, DPhil (UPE)

Dean of Students
Mr LP Jack: NDip (PMA) (EC Technikon), BTech (PM) (PET), BAPhil (US), MCom (UKZN)

Order of proceedings

Entrance of Graduating Student Procession
(The congregation is requested to rise while the graduating student procession enters the hall)

Entrance of Academic Procession
(The congregation is requested to rise while the academic procession enters the hall)

Moment of Silence
(The congregation is requested to remain standing)

Constitution of Congregation and Welcome
Vice-Chancellor
(The congregation is requested to be seated)

Choral Item
Nelson Mandela University Choir

Awarding of Qualifications
Vice-Chancellor

Dissolution of Congregation
Vice-Chancellor

National Anthem
(The congregation is requested to stand for the singing of the National Anthem)

Departure of Academic Procession
(The congregation is requested to remain standing until the academic procession has left the hall)

The words Cum Laude indicate in the text that the diploma or degree is awarded with distinction to the candidate/s listed.

FACULTY OF SCIENCE

NATIONAL DIPLOMA: ANALYTICAL CHEMISTRY

CONSTANCE, Gavin Dale
KEPE, Belinda
MARWANA, Manzila
MOREKU, Clementine
MZINI, Siphokazi
NGCOBO, Nwabisa
RHUBHUSHE, Izibele Izabel
SEDUPANE, Tshegofatso
VAN RHEEDE VAN OUDTSHOORN, Francois Toit

DIPLOMA IN ANALYTICAL CHEMISTRY

HUMAN, Jacq-Mari
JACK, Yolando
KWINANA, Tsepo Nicholaas
LUVUNO, Ntokozo
MABASO, Mongikazi Yonela
MAKHUBELA, Believia
MANYALA, Vuyolwethu Sesethu
MAXITI, Lona
MBANDEZI, Olonachulumanco
MENZI, Lubabalo
MGOJO, Tandolwetu
MSWELI, Khumbulani
NGENI, Aviwe
NTONINTSHI, Lunathi
QWANE, Patuxolo
SIRUNU, Sinoxolo
WALSON, Bestman Menidin

DIPLOMA IN CHEMICAL PROCESS TECHNOLOGY

AHLERS, Gareth Neal
GCUME, Christopher
JIKIJELA, Ande
MBANE, Sitembiso
MBIMBI, Samkelo
MOYAKHE, Doria
NGWENDU, Akona
NOGCINISA, Zizipho Dorkas
NONGAYIYANA, Alfred Anathi
NXUMALO, Thulisile Xavier
ONIANWA, Fred Chijindu Inaks
PILANE, Kagiso
PUDUMO, Lerato Pearl
SOLO, Ndumiso Moses
SOMANA, Ayabulela
VENA, Siphosenkosi

CUM LAUDE

MNYIPIKA, Yonela Brighty
MOSIYA, Anggalo Bonolo

NATIONAL DIPLOMA: POLYMER TECHNOLOGY

DANDALA, Lolitha
LOSE, Ntombizandile
SKEPE, Nkululeko

DIPLOMA IN POLYMER TECHNOLOGY

MALGAS, Garth Dylan
NOBEBE, Sinethemba

ADVANCED DIPLOMA IN ANALYTICAL CHEMISTRY

AUGUST, Shadey Calsey
BOTHA, Santino Mikaylah
GORA, Sivuyisiwe
ZULU, Minenhle Mandisa

CUM LAUDE

TARENTAAL, Kurtley Chad

BACHELOR OF SCIENCE

ACKERDIEN, Shiraz
BARNARDO, Brandon
BARTLETT, Greig Noel
BASSON, Kevin Andre
BESTER, Darryl
BIDDULPH, Kyle Bradley
BLANCO DE RUS, Carlos
BROWNE, Zackira Sylvia
CHIMBETETE, Tafadzwa Edwin
CHRISTOFFEL, Brahndee
CLARKSON, Megan Leigh
COMBRINK, Bryce Carl
DAVIS, Jade
DEYSEL, Caylin
DILIMA, Abulele Sokhana
DOOKLEY, Veronique Bernadette
DU PLESSIS, Zahn
ELSOM, Lisa-Marié
FERNANDES, Helder Jose
FERREIRA, Tiaan Pierre
FLETCHER, Shirvargo
FROSLER, Hamish Andrew
GACA, Anelisa Sibahle
GOLIATH, Taryn Clair
GOXO, Lwando
HARDMAN, Laurence
HAVHI, Mpho
HELM, Cleo Barbara
HILL, Dominic Jon
JACOB, Siphosethu
JACOBS, Aidan Glenn
JACOBS, Ashleigh
JAFTHA, Dylan Leon Steve
JANSEN, Robyn Chemóne
JORDAAN, Celéne Evelyn
KEKANA, Dikeledi Mahlaku Mmakgabo
KENNEDY, Chanté Leigh-Ann
KHAN, Nescaya Claire
KOEBERG, Bryce Lynton
KOTZÉ, Gregory Benjamin
KRITZINGER, Donné Ashley
KUSANO, Tendai Alban Michael
LEWIS, Courtney
LUPONDWANA, Fundiswa Aviwe
MAKONDO, Nyiko Challens
MALEBANA, Seshwahla Salome
MARITZ, Marius Johann

MASON, Michael Timothy
MEYER, Carl
MUTSVAIRO, Takudzwa Valentina
NTLIZIYWANA, Nosicelo
NTSONGELWA, Mandilakhe
OLIVIER, Tiaan
OPOKU-ADDAI, Sibongile Afia
POSWAYO, Olwethu Oscarina
RAMSERN, Sandhya
SAM, Achish
SETZKORN, Emma Renate
SIRKHOTTE, Saeedah
SITHOLE, Sikhumbuzo
SMART, Richard Oliver
SMITH, Nathan
SWART, Johannes Jurgens
SWART, Theo Louis
URIO, Naomi Humphrey
VON SCHOULTZ, Kaamilah
VORSTER, Heine
VUTHUZA, Ntuthuzelo
WINLOCK, Mishkah Chelin
YAWA, Siyabulela Siyasanga
ZINGANI, Ntombizanele

CUM LAUDE

ABRAHAMS, Waldo
BOTHA, Lizhare
ERASMUS, Christopher Daniel
NQAYIYA, Awonke
OOSTHUIZEN, Delia

BACHELOR OF SCIENCE INFORMATION SYSTEMS

EKSTEEN, John-Dré
FAUL, Richard Henry
FRANCIS, Dylan
KATYWA, Odwa Justice
KRALO, Nelisa
NAUDÉ, Gerrit Stephanus Jacobus
NTLANGANISO, Anelisa
REEVES-WILLIAMS, Jarek James
STUBBS, Michael James
SWEMMER, Ferdi

CUM LAUDE

MAKUBALO, Themba

BACHELOR OF TECHNOLOGY: CHEMISTRY

MYATAZA, Pumeza

BACHELOR OF COMMERCE HONOURS

BIKA, Kholisa
(Information Systems and Business Management)
DYASON, Charles
(Computer Science and Information Systems)
MUSHAVI, Tichafa
(Information Systems and Accounting)
NGWENYA, Moreblessing Tafadzwa
(Computer Science and Information Systems)

BACHELOR OF COMMERCE HONOURS IN MATHEMATICAL STATISTICS

APPIAH-DANQUAH, Adwoa Achiaa

BACHELOR OF SCIENCE HONOURS IN BIOCHEMISTRY

REDDY, Nireshini

BACHELOR OF SCIENCE HONOURS IN CHEMISTRY

CEKISANI, Khanyisa Lebohang
GOVENDER, Keshlin
HAMUKOSHI, Simeon Shiweda
KABA, Sinethemba
MABECE, Nandipha Caroline
MAJODINA, Siphumelele
MARELE, Chulumanco
MATSHIQI, Nazi
MDINGANE, Sikelelwa Sibalwethu
MPALALA, Anele
MUDAU, Rofhiwa
VAN VUUREN, Jason Grant
WILLIAMS, Arushan

CUM LAUDE

KHASIPO, Agnes Zvinaiye
NTOMBELA, Nompilo Princess
SIBARIBOYI, Sinothando

BACHELOR OF SCIENCE HONOURS IN COMPUTER SCIENCE & INFORMATION SYSTEMS

LE ROUX, Jason Garth

BACHELOR OF SCIENCE HONOURS IN FORMULATION SCIENCE

MANENE, Olwethu
MZONGWANA, Sibonokuhle Marven
NGOMA, Unathi
NKQAYINI, Mongezi
PHASHA, Vivey Mogotladi
SOBUWA, Zusiphe Ukhoyena
TANYI, Sam Tambi
WILKINSON, Melanie Jill
YOKWE, Kwanele

CUM LAUDE

MATTHEWS, Nasreen
MITCHELL, Kim
MJALI, Siphathisiwe

BACHELOR OF SCIENCE HONOURS IN MATHEMATICAL STATISTICS

MPUPUMISI, Nkosiphendule

CUM LAUDE

BESELE, Kagiso Francis
GARDINER, Marcell
VON SCHOULTZ, Kaamilah

MASTER OF COMMERCE (RESEARCH)

MILLS, Steven Christopher **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
A BLENDED LEARNING TOOLKIT THAT ACCOMMODATES MULTIPLE LEARNING STYLES
Supervisor: Dr LHJ Van Der Post

MASTER OF SCIENCE (RESEARCH)

BANDA, Peter
(Computer Science and Information Systems)
Title of dissertation:
THE USE OF IMAGE PROCESSING TO DETERMINE CELL DEFECTS IN POLYCRYSTALLINE SOLAR MODULES
Supervisor: Dr L Barnard
Co-supervisor: Dr FJ Vorster

BOTES, Rhys Cameron **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
PROPERTY PRICE PREDICTION: A MODEL UTILISING SENTIMENT ANALYSIS
Supervisor: Prof JH Greyling

DAWSON, Kyle-Richard **- *Cum Laude***
(Biochemistry)
Title of dissertation:
MODELLING THE STRUCTURES AND INTERACTIONS OF LEUKOCYTE INTEGRINS
Supervisor: Prof V Oosthuizen

DEYZEL, Jani Igna
(Mathematical Statistics)
Title of dissertation:
BOOTSTRAP BASED TOLERANCE INTERVALS FOR PHOTOVOLTAIC ENERGY YIELD ASSESSMENTS
Supervisor: Dr CM Clohessy
Co-supervisor: Dr WJ Brettenny

EASTWOOD, Kirstie
(Mathematical Statistics)
Title of dissertation:
A STATISTICAL ASSESSMENT OF AVAILABLE SOLAR RESOURCE ACROSS MULTIPLE SITES IN SOUTH AFRICA
Supervisor: Prof GD Sharp
Co-supervisor: Dr CM Clohessy

EVERETT, Steven Lyle Martin **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
A SECURITIES SETTLEMENT MODEL USING BLOCKCHAIN TECHNOLOGY FOR A CENTRAL SECURITIES DEPOSITORY
Supervisor: Prof AP Calitz
Co-supervisor: Prof JH Greyling

GHENNE, Myriam Francoise Christiane
(Chemistry)
Title of dissertation:
STUDY OF THE INVERTED CLASSROOM IN AN ANALYTICAL CHEMISTRY FIRST YEAR COURSE
Supervisor: Prof EE Ferg
Co-supervisor: Dr MD Gibbs

GIFFORD, Dean **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
A DEEP LEARNING APPROACH TO CLASSIFYING TYRES USING SIDEWALL IMAGES
Supervisor: Prof JH Greyling

GUMEDE, Jabulani Innocent
(Chemistry)
Title of dissertation:
EFFECT OF SINGLE-WALLED CARBON NANOTUBES ON VARIOUS PROPERTIES OF RECLAIMED RUBBER/ NATURAL RUBBER BLENDS
Supervisor: Dr SP Hlangothi
Co-supervisor: Dr JAW Carson

LEONARD, Brydon Andrew **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
DAMAGE RECOVERY FOR ROBOT CONTROLLERS AND SIMULATORS EVOLVED USING BOOTSTRAPPED NEURO-SIMULATION
Supervisor: Dr MC Du Plessis

MABUTO, Briswell **- *Cum Laude***
(Chemistry)
Title of dissertation:
DEVULCANISATION OF TRUCK TYRE TREAD VULCANISATES IN SUPERCRITICAL CARBON DIOXIDE USING DIPHENYL DISULPHIDE AND 2, 2-DITHIOBIS (BENZOTHIAZOLE)
Supervisor: Dr SP Hlangothi
Co-supervisor: Dr AS Ogunlaja
Co-supervisor: Dr K Garde

MDUBEKI, Ntokozo
(Chemistry)
Title of dissertation:
THE EXTRACTION OF BIO-ACTIVE COMPOUNDS FROM SPENT COFFEE GROUNDS AND THEIR APPLICATION IN A COSMETIC FORMULATION
Supervisor: Dr NM Vorster

MLOZA BANDA, Clara **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
A CROWD SENSING METHOD FOR WATER RESOURCE MONITORING IN SMART COMMUNITIES
Supervisor: Prof BM Scholtz

PADAYACHY, Thashen Murugasen **- *Cum Laude***
(Computer Science and Information Systems)
Title of dissertation:
AN INFORMATION EXTRACTION MODEL FOR RECOMMENDING THE MOST APPLIED CASE
Supervisor: Prof BM Scholtz

REDDY, Shanika
(Biochemistry)
Title of dissertation:
THE HEPATOPROTECTIVE CAPACITY OF SELECTED NATURAL PRODUCTS FROM SOUTH AFRICA
Supervisor: Prof M Van De Venter
Co-supervisor: Dr TC Koekemoer

SENEKAL, Ulrich **- *Cum Laude***
(Chemistry)
Title of dissertation:
NOVEL HOST COMPOUNDS N,N'-BIS (9- CYCLOHEXYL-9-XANTHENYL) ETHYLENEDIAMINE AND N,N'-BIS (9-CYCLOHEXYL-9-THIOXANTHENYL) ETHYLENEDIAMINE: AN INVESTIGATION OF THEIR INCLUSION ABILITY
Supervisor: Prof B Barton

SERAMENG, Tshepo Joba
(Physics)
Title of dissertation:
ON THE STUDY OF THE PERFORMANCE OF PHOTOVOLTAIC POWER PLANTS
Supervisor: Prof EE Van Dyk
Co-supervisor: Dr KT Roro

STEYN, Sheldon
(Biochemistry)
Title of dissertation:
THE CHARACTERIZATION OF THE INTERACTION BETWEEN STREPTOCOCCUS PNEUMONIAE PSPC AND HOMO SAPIENS PLGR
Supervisor: Prof V Oosthuizen
Co-supervisor: Prof O Tastan-Bishop

SWANEPOEL, Bresler **- *Cum Laude***
(Biochemistry)
Title of dissertation:
NEW SYNERGIC BIOMATERIALS FOR ANTI-CANCER THERAPY
Supervisor: Prof M Van De Venter
Co-supervisor: Dr L Venables

TALLA, Assane
(Physics)
Title of dissertation:
BLOCK COPOLYMER TEMPLATES FOR METAL OXIDE NANOSTRUCTURES
Supervisor: Prof JR Botha
Co-supervisor: Dr ZN Urgessa

VAN LOSENOORD, Wynand **- *Cum Laude***
(Biochemistry)
Title of dissertation:
ISOLATION AND CHARACTERISATION OF A CHANNEL INHIBITOR FROM BUNODOSOMA CAPENSE
Supervisor: Prof CL Frost
Co-supervisor: Dr J Krause
Co-supervisor: Dr S Parker-Nance

VUMBUGWA, Monphias
(Physics)
Title of dissertation:
CORRELATION OF THERMAL IMAGES AND POWER DEGRADATION PHOTOVOLTAIC MODULES
Supervisor: Prof EE Van Dyk
Co-supervisor: Dr JL Crozier-McCleland
Co-supervisor: Dr FJ Vorster

YASO, Akhona Phakamani
(Physics)
Title of dissertation:
MONITORING OF GRID-INTEGRATED AND STAND-ALONE PHOTOVOLTAIC SYSTEMS
Supervisor: Prof EE Van Dyk
Co-supervisor: Dr FJ Vorster
Co-supervisor: Dr RD Schultz

ZIETSMAN, Jaco Frederick
(Computer Science and Information Systems)
Title of dissertation:
SUSTAINABILITY REPORTING GUIDELINES FOR HIGHER EDUCATIONAL INSTITUTIONS IN SOUTH AFRICA
Supervisor: Prof AP Calitz

MASTER OF SCIENCE IN NANOSCIENCE (COURSEWORK)

HICKSON, Matthew Victor **- *Cum Laude***
Title of treatise:
THE SYNTHESIS, CHARACTERIZATION AND APPLICATION OF PEPTIDE CAPPED MAGNETITE NANOPARTICLES FOR THE TARGETING OF CANCER CELLS

Supervisor: Dr R Betz
Co-supervisor: Prof CL Frost
Co-supervisor: Prof ZR Tshentu

SARPONG, Nancy Owusu Akyere
Title of treatise:
DEVELOPMENT OF A NYSTATIN-LOADED MICELLAR SYSTEM FOR ORAL MUCOADHESION

Supervisor: Prof G Kilian
Co-supervisor: Mr Y Kadernani
Co-supervisor: Prof S Roux

THOLE, Sagoleka Thabo
Title of treatise:
AN INVESTIGATION INTO BILE FORMATION OF WISTAR RATS FOR EXCRETION OF INJECTED GOLD NANOPARTICLES

Supervisor: Prof S Roux

XAKAZA, Hlumisa Belinda
Title of treatise:
ASSESSING IN - VIVO CLEARANCE OF COLORECTAL CANCER - TARGETING PEPTIDE – FUNCTIONALIZED GOLD NANOPARTICLES

Supervisor: Dr H Davids
Co-supervisor: Prof S Roux

DOCTOR OF PHILOSOPHY

CLARKE, Stephen
(Biochemistry)
Title of thesis:
ELUCIDATING THE MOLECULAR BASIS OF THE INTERACTION BETWEEN THE ß2-INTEGRIN, AXß2, AND THE LOW-AFFINITY IgE RECEPTOR, CD23

Supervisor: Prof V Oosthuizen

DOBREVA PETROVA, Petya
(Physics)
Title of thesis:
ENERGY YIELD MODELLING AND ANALYSIS OF PHOTOVOLTAIC SYSTEMS IN NAMIBIA

Supervisor: Prof EE Van Dyk
Co-supervisor: Dr FJ Vorster

MARX, Genevéve
(Physics)
Title of thesis:
MICROSTRUCTURAL EVOLUTION OF WELDED CREEP AGED 12% Cr MARTENSITIC STAINLESS STEEL
Supervisor: Dr JE Westraadt
Co-supervisor: Prof JH Neethling

MBULANGA, Crispin Munyelele
(Physics)
Title of thesis:
DEVELOPMENT OF TITANIUM DIOXIDE FOR PHOTO-ELECTROCHEMICAL HYDROGEN PRODUCTION
Supervisor: Prof JR Botha

PRETORIUS, Christiaan Johannes
(Applied Mathematics)
Title of thesis:
A COMPARATIVE STUDY OF ARTIFICIAL NEURAL NETWORKS AND PHYSICS MODELS AS SIMULATORS IN EVOLUTIONARY ROBOTICS

Supervisor: Dr MC Du Plessis
Co-supervisor: Prof J Gonsalves

SAGANDIRA, Cloudius Ray
(Chemistry)
Title of thesis:
EFFICIENT AND SAFE SYNTHETIC PROCESSES TOWARDS (-) OSELTAMIVIR PHOSPHATE (TAMIFLU) IN CONTINUOUS FLOW SYSTEMS

Supervisor: Prof P Watts

SCOTT, Laura Louise
(Microbiology)
Title of thesis:
ß-N-METHYLAMINO-L-ALANINE IS A DEVELOPMENTAL NEUROTOXIN

Supervisor: Prof TG Downing

SMUTS, Martin Bradley
(Computer Science)
Title of thesis:
A MULTI-FACTOR MODEL FOR RANGE ESTIMATION IN ELECTRIC VEHICLES

Supervisor: Prof BM Scholtz
Co-supervisor: Prof JL Wesson

VAN ONSELEN, Rianita
(Microbiology)
Title of thesis:
MECHANISMS AND MODES OF ß-N-METHYLAMINO-LALANINE NEUROTOXICITY: THE BASIS FOR DESIGNING THERAPIES

Supervisor: Prof TG Downing

DOCTOR OF PHILOSOPHY IN TEXTILE SCIENCE

MADUNA, Lebo
Title of thesis:
DEVELOPMENT OF SPUNLACED FILTERS FROM PAN, PPS AND PI FIBRES FOR INDUSTRIAL USE

Supervisor: Dr A Patnaik
Co-supervisor: Prof L Hunter

THE DEGREE OF DOCTOR OF PHILOSOPHY (BIOCHEMISTRY)

STEPHEN CLARKE

Previous qualifications:

2010	BSc	Nelson Mandela Metropolitan University
2011	BScHons	Nelson Mandela Metropolitan University
2014	MSc	Nelson Mandela Metropolitan University

Thesis:
ELUCIDATING THE MOLECULAR BASIS OF THE INTERACTION BETWEEN THE ß2-INTEGRIN, αXß2, AND THE LOW-AFFINITY IgE RECEPTOR, CD23

This study introduces a novel explanation into how human CD23 interacts with the $\alpha_X\beta_2$ integrin and, by proxy, the broader family of integrin receptors. This interaction is essential for the immune defence system of vertebrates and is associated with regulation of antibody production, maturation of immune cells, and induction of inflammation. By performing bioinformatics docking predictions, coupled with experimental verification, this study identified two novel acidic protein motifs within CD23 that regulate integrin interactions. The study is accepted internationally as providing a physiologically relevant mechanism for this interaction not shown by previously published hypotheses.

Supervisor: Prof V Oosthuizen

THE DEGREE OF DOCTOR OF PHILOSOPHY (PHYSICS)

PETYA DOBREVA PETROVA

Previous qualifications:

1992	MSc Physics	Sofia University, Sofia, Bulgaria

Thesis:
ENERGY YIELD MODELLING AND ANALYSIS OF PHOTOVOLTAIC SYSTEMS IN NAMIBIA

The energy output of photovoltaic systems depends on external factors, like solar radiation and temperature, and on internal - system specific - factors. The inherent variability of output pushes up the cost of investment in photovoltaic systems, which is contingent on predictive models. This study developed predictive models for photovoltaic systems in Namibia and proposed a novel method for the assessment of the accuracy of the models. It also introduced new quantities to measure the models' predictive capabilities and a new method, based only on measured quantities, to assess the state of photovoltaic modules in the systems.

Supervisor: Prof EE Van Dyk
Co-supervisor: Dr FJ Vorster

THE DEGREE OF DOCTOR OF PHILOSOPHY (PHYSICS)

GENEVÉVE MARX

Previous qualifications:

2013	BSc (Materials Development) (*Cum Laude*)	Nelson Mandela Metropolitan University
2014	BScHons (Physics) (*Cum Laude*)	Nelson Mandela Metropolitan University
2016	MSc (Physics) (*Cum Laude*)	Nelson Mandela Metropolitan University

Thesis:
MICROSTRUCTURAL EVOLUTION OF WELDED CREEP AGED 12% Cr MARTENSITIC STAINLESS STEEL

Martensitic stainless steels with 9-12% Cr additions are used extensively for high-pressure steam pipes in coal-fired power plants. Due to economic reasons, welding must be performed on service exposed materials when a component needs to be replaced. This study aimed to develop an approach to help power plant companies to more accurately analyse their welded steel components using advanced electron microscopy techniques. This research enabled the assessment of the remaining life of components using a microstructure-based approach instead of conservative conventional approaches. Since this is a novel strategy for the SA power plant industry, this thesis contributes significantly to industry innovation and improved infrastructure management.

Supervisor: Dr JE Westraadt
Co-supervisor: Prof JH Neethling

THE DEGREE OF DOCTOR OF PHILOSOPHY (PHYSICS)

CRISPIN MUNYELELE MBULANGA

Previous qualifications:

2010	BSc (Physical Sciences)	University of Burundi
2013	MSc (Mathematical Sciences)	African Institute for Mathematical Sciences
2015	MSc (Physics)	Nelson Mandela Metropolitan University

Thesis:
DEVELOPMENT OF TITANIUM DIOXIDE FOR PHOTO-ELECTROCHEMICAL HYDROGEN PRODUCTION

Nano-structured titanium dioxide is a promising material for the production and storage of hydrogen, believed by many to be the fuel of the future. In principle, the large surface area of these tiny structures will enhance the photo-catalytic efficiency of the material when incorporated into a photo-electrochemical cell for water splitting. This study successfully demonstrates the synthesis of titanium dioxide in nanotube form. It contributes to our understanding of two synthesis routes (hydrothermal growth and gel-calcination), as well as the chemical reactions that lead to the controlled formation of titanium dioxide with the desired nano-scale morphology.

Supervisor: Prof JR Botha

THE DEGREE OF DOCTOR OF PHILOSOPHY (APPLIED MATHEMATICS)

CHRISTIAAN JOHANNES PRETORIUS

Previous qualifications:

2008	BSc	Nelson Mandela Metropolitan University
2009	BScHons (Applied Mathematics)	Nelson Mandela Metropolitan University
2011	MSc (Computing Sciences)	Nelson Mandela Metropolitan University

Thesis:
A COMPARATIVE STUDY OF ARTIFICIAL NEURAL NETWORKS AND PHYSICS MODELS AS SIMULATORS IN EVOLUTIONARY ROBOTICS

This study compared two methods of simulation that can be applied to controller evolution in Evolutionary Robotics, namely Artificial Neural Networks (ANNs) and physics-based simulators. Simulators of each type were constructed to model the functioning of three experimental robots and the simulators were compared in terms of their accuracy, computational efficiency and the real-world performance of controllers evolved in each simulator. Results from this study indicated that ANNs offer an accurate and fast alternative to physics-based simulators and that controllers evolved by making use of ANN simulators often outperform controllers evolved in physics-based models.

Supervisor: Dr MC Du Plessis
Co-supervisor: Prof J Gonsalves

THE DEGREE OF DOCTOR OF PHILOSOPHY (CHEMISTRY)

CLOUDIUS RAY SAGANDIRA

Previous qualifications:

2014	BSc	Nelson Mandela Metropolitan University
2015	BScHons (*Cum Laude*)	Nelson Mandela Metropolitan University
2017	MSc (*Cum Laude*)	Nelson Mandela Metropolitan University

Thesis:
EFFICIENT AND SAFE SYNTHETIC PROCESSES TOWARDS (-)-OSELTAMIVIR PHOSPHATE (TAMIFLU) IN CONTINUOUS FLOW SYSTEMS

Tamiflu is one of the most effective anti-influenza drugs, when patients need this medication in Africa it needs to be imported at significant cost. Most of the synthetic routes utilise azide chemistry which are highly dangerous and explosive reactions, hence it is very difficult to manufacture this drug within South Africa. The focus of this research was to develop safe and efficient processes towards this important drug taking advantage of microreactor technology. This research successfully developed an integrated continuous flow process for Tamiflu in 81% overall yield. The vision was to produce the drug locally within South Africa.

Supervisor: Prof P Watts

THE DEGREE OF DOCTOR OF PHILOSOPHY (MICROBIOLOGY)

LAURA LOUISE SCOTT

Previous qualifications:

2011	BSc	Nelson Mandela Metropolitan University
2012	BScHons	Nelson Mandela Metropolitan University
2014	MSc (*Cum Laude*)	Nelson Mandela Metropolitan University

Thesis:
β-N-METHYLAMINO-L-ALANINE IS A DEVELOPMENTAL NEUROTOXIN

The cyanobacterial metabolite β-N-methylamino-L-alanine (BMAA) was hypothesized to be the causative agent of Amyotrophic Lateral Sclerosis/Parkinsonism Dementia Complex (ALS/PDC). However, no experimental model could adequately reproduce the signs/symptoms. In this developmental toxicity study BMAA was shown to be toxic only during specific stages of brain development (equivalent of 3rd trimester in humans). A single neonatal exposure caused lifelong, progressive neurodegeneration in rats. This animal model of neurodegenerative diseases is the only experimental model to replicate all neuropathology's characteristic of Alzheimer's and Parkinson's diseases and ALS, and as such creates a comprehensive platform for the development and testing of therapeutic agents.

Supervisor: Prof TG Downing

THE DEGREE OF DOCTOR OF PHILOSOPHY (COMPUTER SCIENCE)

MARTIN BRADLEY SMUTS

Previous qualifications:

2013	BCom (Information Systems & Accounting)	Nelson Mandela Metropolitan University
2014	BComHons (Information Systems & Accounting) (*Cum Laude*)	Nelson Mandela Metropolitan University
2016	MCom (Computer Sc & Information Systems) (*Cum Laude*)	Nelson Mandela Metropolitan University

Thesis:
A MULTI-FACTOR MODEL FOR RANGE ESTIMATION IN ELECTRIC VEHICLES

The adoption of electric vehicles in South Africa has been slow compared to first-world countries as South Africa has additional challenges. The aim of this thesis was to investigate the factors that influence energy consumption in electric vehicles and to propose a model that can accurately estimate the remaining driving range. These factors guided the data collection process and related to driving behaviour, terrain, traffic, weather, and vehicle dynamics. The proposed model has four main components that collect, process, and analyse data from various sources in order to produce estimates that relate to energy consumption, remaining driving range and trip planning. Several machine learning algorithms were evaluated and the boosted decision tree algorithm was selected and used to identify patterns in the data and to generate a predictive model. The model is the first of its kind implemented in South Africa and the accuracy thereof was verified in several field experiments. The technical solution incorporated a Nissan Leaf, Big Data, IoT and the Microsoft Azure platform. The research received international recognition as is evident from the five papers that were published.

Supervisor: Prof BM Scholtz
Co-supervisor: Prof JL Wesson

THE DEGREE OF DOCTOR OF PHILOSOPHY (MICROBIOLOGY)

RIANITA VAN ONSELEN

Previous qualifications:

2011	BSc	Nelson Mandela Metropolitan University
2012	BScHons	Nelson Mandela Metropolitan University
2014	MSc (*Cum Laude*)	Nelson Mandela Metropolitan University

Thesis:
MECHANISMS AND MODES OF β-N-METHYLAMINO-L-ALANINE NEUROTOXICITY: THE BASIS FOR DESIGNING THERAPIES

Debilitating and terminal neurodegenerative diseases such as Parkinson's, Alzheimer's, and motor neuron diseases have a combined incidence greater than 10% in aging populations. The majority of cases have unknown aetiologies. The cyanobacterial neurotoxin β-N-methylamino-L-alanine (BMAA) has recently been shown to produce pathologies consistent with these diseases. In this study, mechanisms and modes of BMAA neurotoxicity were investigated. Popular hypothetical mechanisms were disproved, and a novel mechanism was proposed and confirmed in cell culture and in a newly developed animal model. Based on this mechanism, new modes of toxicity were identified and rationally designed preventative therapies were developed and tested successfully.

Supervisor: Prof TG Downing

THE DEGREE OF DOCTOR OF PHILOSOPHY IN TEXTILE SCIENCE

LEBO MADUNA

Previous qualifications:

2004	BSc	University of Venda
2010	MTech	Technical University of Liberec

Thesis:
DEVELOPMENT OF SPUNLACED FILTERS FROM PAN, PPS AND PI FIBRES FOR INDUSTRIAL USE

This study investigated the use of water jets to produce filter fabrics for use in coal fired power plants to capture dust particles generated when coal is burned. The study demonstrated that it was possible to produce spunlaced filter fabrics with the desired performance related properties so that they could be used as an alternative to the presently used needle-punched filter fabrics in terms of air permeability, shrinkage, tensile strength and dust filtration properties.

Supervisor: Dr A Patnaik
Co-supervisor: Prof L Hunter

Honorary Doctoral Recipient
Dr Vuyo Mahlati – Doctor of Philosophy (Honoris Causa)

Born in the Eastern Cape, Vuyo Mahlati started her education at a farm school where her mother taught, and later went to a missionary boarding school for her higher education. This is where her passion for seeking alternatives to the oppressive education system of the time began, choosing to be an agent of change.

Vuyo obtained her PhD from the University of Stellenbosch with her thesis focusing on the role of value chains in mainstreaming rural entrepreneurs into global markets. She later trained as a policy specialist at the London School of Economics in the UK.

Her life as an activist was enabled by education, commencing her career as a young researcher in disability, children and women issues and later as a business linkage mentor at the Small Business Development Agency (SBDA). This led to her participation in South Africa's Constitution-making research process after the release of former President Nelson Mandela from prison. Dr Mahlati was also involved in the first UNICEF Status on Women and Children report in South Africa.

During this period, and as part of her research, she visited Zimbabwe, received by Joshua Malinga, disability activist and then mayor of Bulawayo, interviewing other leaders who exposed her to Zimbabwe's change agenda and indigenisation. Seeing the possibility of redress, gave her new insights and inspiration and she returned home to register her own consultancy, allowing her to frame and drive the change agenda.

In the mid-2000's, Dr Mahlati convened the technical team that facilitated the launch of the India Brazil South Africa (IBSA) Women's Forum, premised on the call for "an inclusive macroeconomic framework". This culminated in the signing of the Memorandum of Understanding in India in October 2008, by the three heads of state.

In March 2009, she was a South African delegate and Technical Advisor for the Presidency to the United Nations Commission on the Status of Women, where she presented on the financial crisis theme. This enhanced South Africa's contribution to bringing urgency and intensifying the global call for inclusive economic growth and development.

In May 2010 Dr Mahlati was appointed by the President to serve for a period of five years, as one of the inaugural members of South Africa's National Planning Commission. In September 2018 she was appointed by the President to Chair the Advisory Panel on Land Reform and Agriculture.

Her directorships are many and include previously chairing the South African Post Office (including the Postbank) membership of the Financial Markets Advisory Board and Financial Services Board Licensing Committee. She previously served two terms as President of the International Women's Forum (IWF) South Africa, and is currently the global director of the IWF Board and Co-Chair of the IWF Presidents' Council.

Dr Mahlati's entrepreneurial experience includes participation in major business ventures that include the listed Sasol Oil. As a social entrepreneur, she owns Africa's first indigenous goats cashmere processing plant in Butterworth, Eastern Cape, and through this initiative has helped revive the clothing and textile industry using inclusive rural value chains. She serves as President of the African Farmers Association of South Africa (AFASA) and is a member of the IDC Agroprocessing Competitiveness Fund.

She has been a recipient of the Black Management Forum Presidential Award, as well as the Black Business Executive/ ABSA Kaelo (guidance and wisdom) Award and in 2014, received the Mail and Guardian, Southern Africa Trust Individual Award for Drivers of Change.

For her contribution to bringing urgency and intensifying the global call for inclusive economic growth and development, and to her scholarship and praxis of entrepreneurship and economic development, particularly in marginal rural economies, it is an honour for Nelson Mandela University to confer the degree of Doctor of Philosophy (honoris causa) on **Dr Vuyo Mahlati**.

Honorary Doctoral Recipient
Sibongile Mkhabela – Doctor Of Philosophy (Honoris Causa)

Sibongile (Bongi) Mkhabela, a social worker by profession and a passionate social activist by orientation is the current Chief Executive Officer of the Nelson Mandela Children's Fund as well as the Nelson Mandela Children's Hospital Trust.

Her first steps as an activist were intuitive rather than political; as a child she recognised and questioned the banal and common indignities that shaped black lives. Bongi later became a student leader and was part of the driving force behind the nation-wide June 16, 1976 student revolt, a turning point in South Africa's anti-apartheid struggle.

She was charged with 10 other students for sedition in what became known as the "Soweto 11" Trial. In 1981, six years after the 1976 protests, she was finally released. Time spent in the women's prison resolved her commitment to fighting for the dignity of black lives and strengthening the position of African women.

Bongi was trained by The Legal Resources Centre as a para-legal and founded the Zola Advice Office offering practical, social and para-legal advice and assistance to people living under the rule of an oppressive state. Building on her work at Zola, she proceeded to establish the National Advice Centre's association advocating for women's rights.

After the completion of her graduate studies, she headed up the Development Resources Centre which drove research aimed at creating an enabling environment for civil society. The work led to the formation of the SA Non-Governmental Organisations Council and contributed to the formation of the National Development Agency.

Part of that experience saw her work in senior positions for the United Nations Development Programme; serve the first democratically elected government as a Director in the Office of Deputy President Mbeki responsible for programming with specific reference to civil society-government partnerships as well as overseeing the implementation of the UN Children's Charter.

In her tenure as CEO of the Nelson Mandela Children's Fund, Bongi embraced Nelson Mandela's mission to change how society treats the African child and in the last decade, has been on a journey to ensure that the county's children have access to world-class tertiary healthcare and institutions devoted to their care. She led the Nelson Mandela Children's Hospital Trust's, R1b capital campaign for the building and equipping of the Nelson Mandela Children's Hospital. The Hospital is the second of its kind in Southern Africa and provides, state-of-the-art tertiary paediatric care and aims to improve the quality of paediatric research and training in Sub-Saharan Africa.

A graduate from the University of Zululand she is also a Joel L. Fleishman Civil Society Policy Fellow at Duke University in North Carolina, USA, and completed her post-graduate Business Management studies with the University of the Witwatersrand Business School in Johannesburg. In 2017, Mkhabela was awarded a Rockefeller Foundation Fellowship in Italy, a residency to reflect and write on her experiences and the future of social justice movements.

In April last year, Bongi was awarded The National Order of Luthuli (Silver) by the President of South Africa, Mr Cyril Ramaphosa. She serves on various boards, including Senegal-based Trust Africa and the USA-based Global Philanthropy Alliance. She recently stepped down (after 12 years of service) from Barloworld, a listed global company where she served, among others, as Chairman of the Ethics and Transformation Committee.

Her novel Open Earth and Black Roses recounts the ordinary and extraordinary tales of black families in Apartheid South Africa and she tells her personal experience as a young woman imprisoned, restless and resisting social injustice.

In recognition of her fight against apartheid; her continued work in social justice and for her excellent contribution to the well-being of South Africa's children, it is an honour for Nelson Mandela University to confer the degree of Doctor of Philosophy (honoris causa) on **Sibongile Mkhabela**.

Honorary Doctoral Recipient
Reverend Frank Chikane – Doctor of Philosophy (Honoris Causa)

Reverend Frank Chikane matriculated from Orlando High School in Soweto in 1971 and proceeded to the University of the North (Turfloop), now the University of Limpopo, in 1972 to study science.

Following the Frelimo Rally in 1974 which lead to the arrest of student leaders, and forced some students into exile, Chikane was made leader of the Student Aid Committee which played the role of the SRC. He gave evidence on behalf of the students at the Snyman Commission on the unrest on campus, and due to his role as a leader, was advised not to return to the university for his own safety.

After leaving university he taught Mathematics and Physical Science at Naledi High School in Soweto, but the Security Police put pressure on the school to force him to leave. He then joined Christ for all Nations (CFAN) in 1975, convinced of God's calling in his life. Again, the security establishment threatened CFAN and he left to work as an evangelist with his church, the Apostolic Faith Mission (AFM). In 1979, he completed his training as a pastor at the AFM and was ordained in March 1980. He was subsequently defrocked in 1981 due to his political involvement and reinstated with an apology nine years later in 1990.

Chikane was detained and severely tortured on various occasions between 1977 and 1982. He was part of the founders of the United Democratic Front (UDF) and served as its Vice-President from 1983 to 1985. In February 1985 he was arrested, charged and tried for treason with sixteen other leaders of the UDF, including Albertina Sisulu, and was acquitted in December of the same year. He later continued his education, obtaining a master's degree in Religious studies from the University of Natal (now Kwa-Zulu Natal) and a master's in Public Administration from the Kennedy School of Government, Harvard University.

He served as a Co-ordinator and then Director at the Institute of Contextual Theology (ICT) from 1981 to 1987 when he was appointed General Secretary of the South African Council of Churches (SACC), replacing Dr Beyers Naudé. He had the task of carrying the organisation through the most challenging times characterised by the worst forms of repression, gross violation of human rights and violence. Following the bannings and restrictions imposed on most organisations in 1988, the SACC became the only voice of the people. Consequently, its Headquarters was bombed and Chikane's clothes were laced with a chemical weapons substance which nearly led to his death. He played an important role during the negotiation period, and transition from apartheid to a democratic South Africa, including serving as a Commissioner of the Independent Electoral Commission (IEC) which ushered in the new democratic order. Chikane's influence in the 1980s and the 1990s cannot be overstated.

He became a Special Advisor to Deputy President, Thabo Mbeki, in 1995; was appointed Director General in the Office of the Deputy President in 1996, and a Deputy Secretary of the Cabinet in 1998. After the 1999 elections he was appointed Director General in the Presidency and Secretary of the Cabinet, where he remained until 2009. He was also elected to the National Executive Committee (NEC) of the ANC in 1997.

He has published several articles and books including his 1988 autobiography No Life of My Own, his 2012, Eight Days in September: The Removal of Thabo Mbeki, which was preceded by the so-called 'Chikane Files' published in several Independent newspapers, and his 2013, Things That Could Not be Said.

Other positions and accolades bestowed on Rev Chikane include his appointment as a Senior Research Fellow in the Department of Religious Studies at UCT, President of the AFM International, the Swedish Diakonia Peace Prize for Outstanding Theology Contribution for Justice and Peace in SA and the Peace and Freedom Prize from the Swedish Labour Movement. He has served in various boards of companies and continues to do so. He now serves as Moderator of the Churches Commission on International Affairs (CCIA) of the World Council of Churches (WCC) which deals with conflict areas globally.

For his contribution as a servant leader, his tireless pursuit of justice, peace, conflict resolution and reconciliation; establishing the architecture of democratic governance in a post-apartheid state; developing and promoting the vision of the African Renaissance and consistently placing people at the centre of socio-economic development, it is an honour for Nelson Mandela University to confer the degree of Doctor of Philosophy (honoris causa) on **Reverend Frank Chikane**.

Honorary Doctoral Recipient
Professor Morgan Chetty – Doctor of Philosophy (Honoris Causa)

Prof Mohambry (Morgan) N Chetty has been at the helm of Family Medicine for about 40 years. He has dedicated his life to promoting access to quality healthcare, with a focus on the poor, and being patient-centered.

He obtained his MBChB from the University of Natal and has completed numerous other medical qualifications from both South African and American institutions. Healthcare in the private sector was in chaos. It was divided on ethic lines, a huge public/private divide, poorly coordinated and very system-centric, health professional and hospi-centric focused.

In 1998, he single-handedly raised funds and gathered doctors together to start the first truly democratic doctor organisation, The South African Managed Care organisation. He was elected as the Vice-Chairperson and he still holds that position today. The ethos was to bring doctors together to be cost-efficient, to be custodians of our scarce resources and to deliver holistic quality care. He was also instrumental in the erection of one of the first Black owned hospitals post-apartheid in Durban, Mount Edgecombe Hospital.

There was a need to bring together ethically divided healthcare practitioners in South Africa and once again, Prof Chetty led the team to establish an umbrella organisation, the Independent Practitioners Association of South Africa. This was the turning point as the country saw doctors unite for the common purpose of "caring" for patients, managing scarce resources and striving for quality outcomes. Prof Chetty is the Chairman of the IPA Foundation of SA (Independent Practitioners Association) and is also the Chairman of the regional IPA – The KZN Doctors Healthcare Coalition.

He was awarded the Faculty of Family Practitioners Fellowship for his outstanding work amongst Family Practitioners by the College of Medicine in SA and won a Fullbright Humphrey Fellowship to the USA in 1993 where he obtained a Master's in Public Health at Tulane University in New Orleans.

Prof Chetty has written over 80 articles and columns on healthcare for various national and international medical journals and publications. He is also regularly involved in radio and TV interviews and is often quoted in the press. Prof Chetty is the author of two books on "Managed Health Care".

He has organised the Africa Healthcare Congress in SA for the past six years and most recently, was involved in the organising of the Africa Health Business Symposium, bringing together high-ranking health officials from Africa and abroad to debate the issue of universal healthcare in Africa.

In 2018, he was appointed by the Minster of Health to the NHI (National Health Insurance) GP Contracting Committee and also onto the Board of the "Office of Health Standards Compliance" (OHSC). This body will accredit all facilities, providers and other health establishments to work for the NHI Programme.

Prof Chetty is a member of the International Academy of Quality and Safety (IAQS) and on the Patient-Centered Committee to drive the paramount role of the patient in healthcare decisions - membership of the Academy is one of the highest honours that an Individual working in the area of Quality and Safety can achieve. In addition, he was also appointed as an ISQua (The International Society for Quality in Health Care) Expert Member.

He was recently awarded the Discovery Health Lifetime Achievement Award for work in the quality of healthcare, Lifetime Membership to the International Academy of Quality and Safety (IAQS) and received the Dr Humphrey Zokufa, Titanium Lifetime Achievement Award (BHF) – for Significant Contribution to the Healthcare Industry over time.

For his contribution in upskilling doctors in South Africa, leading 5000 primary care doctors and the empowerment of patients on patient rights, it is an honour for Nelson Mandela University to confer the degree of Doctor of Philosophy (honoris causa) on **Professor Morgan Chetty**.

Academic dress

Special academic attire was designed for office bearers at Nelson Mandela University to be worn at prestigious academic events like graduation.

Each outfit – from that of the Chancellor and Vice-Chancellor to those of the Executive Deans – has been meticulously selected to signify a particular office; this is a tradition that is consistent with leading universities throughout the world.

The gowns, caps and hoods of Nelson Mandela University graduates were similarly inspired and are explained in detail below.

Academic dress for graduates at Nelson Mandela University is as follows:

Doctoral degrees

Gown: Cardinal red polyester cashmere gown with long pointed sleeves pleated up with blue cord and button and lined with blue satin with 125mm facings and a blue collar.

Hood: Full shape hood in cardinal red polyester cashmere lined with faculty colour satin and edged around the cowl with 75mm faculty colour ribbon with 15mm blue ribbon overlaid central. 50mm wide straight neckband in cardinal red polyester cashmere, 25mm faculty colour ribbon in centre of neckband with 15mm blue ribbon overlaid central to faculty ribbon.

Cap: Round doctor's bonnet in black velvet with faculty colour cord and tassel.

Master's degrees

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail is used.

Hood: Full shape blue hood lined faculty colour satin and edged around the outside of the cowl with 75mm faculty colour with ribbon. 50mm straight neckband in blue with 25mm faculty colour ribbon centred.

Cap: Black mortarboard with blue tassel.

Postgraduate diplomas

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood lined silver grey satin. Straight neckband with 15mm faculty ribbon on top edge of neckband and around cowl. 15mm silver grey ribbon on bottom edge of neckband and around cowl spaced 20mm away from the faculty colour.

Cap: Black mortarboard with blue tassel.

Bachelor honours degrees

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood lined silver grey satin with 50mm wide straight neckband in faculty colour. Cowl edged 75mm faculty colour ribbon on the outside. 15mm silver grey ribbon runs along the outer edge of the cowl, overlaid on faculty ribbon and on top edge of neckband.

Cap: Black mortarboard with blue tassel.

Four-year bachelor's degrees (including Bachelor of Technology degrees)

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood lined silver grey satin with 50mm wide straight neckband in faculty colour. Cowl edged 75mm faculty colour ribbon on the outside. Silver grey cord runs along the outer edge of the cowl, overlaid on faculty ribbon and on top edge of neckband.

Cap: Black mortarboard with blue tassel.

Three-year bachelor's degrees

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood lined with silver grey satin with 50mm wide straight neckband in faculty colour. Cowl edged 75mm faculty colour ribbon on the outside.

Cap: Black mortarboard with blue tassel.

Advanced diploma

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood lined with silver grey satin with 50mm wide straight neckband. 15mm faculty colour ribbon on top and bottom of neckband around cowl.

Cap: Black mortarboard with blue tassel.

Diploma

Gown: Black gown, long pointed sleeves pleated up with blue twisted double cord and button. Similar cord detail.

Hood: Blue simple shape hood with 50mm wide straight neckband. 25mm faculty colour ribbon on centre of neckband.

Cap: Black mortarboard with blue tassel.

Faculty colours

Arts: Yellow

Business & Economic Sciences: Plum

Health Sciences: Apple green

Law: Grey blue

Education: Orange

Science: Dark green

Engineering, the Built Environment and Information Technology: Light blue

Business School: Black and magenta

Messrs T. Birch & Co (Pty) Ltd and its subsidiary, Croft Magill & Watson (Pty) Ltd, have been appointed as official robe maker to the university and as contracted suppliers of choice to students for graduation academic attire.

Photos In Seconds has been appointed as the official photographer of the university.

Congratulatory message from the Alumni Association

Congratulations on your academic achievement! Welcome to the Nelson Mandela University family. You are now a Nelson Mandela University alumnus.

We would like to take this opportunity to introduce you to the Nelson Mandela University Alumni Association.

Once you have obtained your Nelson Mandela University certificate, diploma or degree you become an alumnus of the university and a member of the Nelson Mandela University Alumni Association. The Association is recognised by the university Council as a structure of the university. The Association supports and enhances the realisation of the university's vision and mission through maintaining and expanding positive relationships with its members.

The Role of the Alumni Association Office
The Alumni Association Office is a public relations and projects department responsible for the day-to-day management and running of the Alumni Association, the University Shop and all matters related to alumni engagement. Primarily, we build relationships and maintain strong links with graduates, parents, friends and supporters of the university through events, networks, services, communications and community engagement.

The Role of Nelson Mandela University graduate
We encourage you to attend the alumni engagement events, be an active alumni ambassador, support your alma mater in a variety of ways including sharing news, expertise, skills, and contributions in cash and kind. We encourage a culture of giving back especially for student bursaries, which can be accessed on our alumni website.

University Shop
Visit the University Shop situated at the Sanlam Student Village on University Way, Summerstrand, for all Nelson Mandela University branded clothing, corporate gifts, bags and memorabilia!

Lifetime connection with Nelson Mandela University
We are proud of our alumni and value your connection.

We encourage you to stay in touch by updating your graduate profile. We will keep you informed with university developments and graduate news through our event invitations, project and campaign updates, regular e-newsletters via our website and social media channels.

Your graduate profile link https://mandela.devman.co.za/Devman/alumni/findme/

We welcome your visit to the Alumni Associates Centre on North Campus in Port Elizabeth.

More info: **T** +27 41 504 3935 **E** alumni@mandela.ac.za
Join us: Nelson Mandela University Alumni
www.alumni.mandela.ac.za @MandelaUni

Stay connected to your *alma mater!*

NATIONAL ANTHEM

Nkosi Sikelel'i-Afrika,
Maluphakanyisw'uphondo lwayo,
Yizwa imithandazo yethu,
Nkosi Sikelela, thina lusapho lwayo.

Morena boloka setjhaba sa heso,
O fedise dintwa le matshwenyeho.
O se boloke, O se boloke setjhaba sa heso,
Setjhaba sa South Africa.

South Africa.

Uit die blou van onse hemel,
Uit die diepte van ons see.
Oor ons ewige gebergtes
Waar die kranse antwoord gee.

Sounds the call to come together,
And united we shall stand.
Let us live and strive for freedom,
In South Africa our land.

Change the World

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