
# GRADUATION CEREMONY

## *Faculty of Science*

**19 July 2021**

# FACULTY OF SCIENCE

Graduation ceremony held virtually on 19 July 2021 due to the COVID-19 pandemic and government restrictions around indoor gatherings..

## ORDER OF PROCEEDINGS

Opening performance by amaAmbush Marimbas.

The Registrar will make introductory comments.

The Chancellor will constitute the congregation.

The National Anthem.

The University Dedication will be read by the President of the SRC.

Musical Item.

A message by the Dean of the Faculty.

Graduation poem by the imbongi.

The Chancellor will confer the qualifications.

Presentation of graduands' names.

The Vice-Chancellor will congratulate the new graduates and diplomates.

The Chancellor will congratulate the new graduates and diplomates and dissolve the congregation.

Closing performance by amaAmbush Marimbas.

# NATIONAL ANTHEM

Nkosi sikelel' iAfrika
Maluphakanyisw' uphondolwayo,
Yizwa imithandazo yethu,
Nkosi sikelela, thina lusapho lwayo.

Morena boloka etjhaba sa heso,
O fedise dintwa la matshwenyeho,
O se boloke,
O se boloke setjhaba sa heso,
Setjhaba sa South Afrika – South Afrika.

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

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

# DISTINCTIONS IN THE FACULTY OF SCIENCE

Bachelors degrees may be awarded with distinction

in a subject (or major), where the student achieves first class passes in specified courses

in the degree, where the student has both distinction in at least one subject (or major) and first class passes in at least the equivalent of six full courses.

Honours degrees are awarded by class (first, second class division one, second class division two, or third).

Master's degrees may be awarded with distinction

in the degree, (by dissertation) for especially meritorious work

in the degree, (by coursework and minor dissertation) for especially meritorious work for the dissertation as well as achieving 75% or better for the coursework.

## FACULTY OF SCIENCE

*Dean: Professor M Ramutsindela*

### DOCTOR OF PHILOSOPHY

Abdulganiyyu, Ibrahim Akinbo
Thesis Title: *A single AKH neuropeptide activating three different fly AKH-receptors: an insecticide study via computational methods.*

Ibrahim Abdulganiyyu completed his undergraduate training at Ahmadu Bello University Zaria in Nigeria. He was a lecturer at Jigawa State Polytechnic, Dutse, before beginning full-time study towards his MSc in 2017, which was upgraded to a PhD in 2018.

Insects are the most abundant and most diverse group of animals on this planet. While many are beneficial, some are pests. In his thesis, Ibrahim Abdulganiyyu used computational methods to study a hormonal system in three fly species. These, the fruit fly, the flesh fly, and the oriental fruit fly, all have the same hormone but different receptors. This study reports the construction of these three receptors from their respective genome sequence and compares the docking of the single hormone to them. Molecular mechanic simulation of the docked structures showed the structural changes the receptors underwent when activated. The thesis results affirm in vitro receptor assay data and further reveal which amino acid of the hormone plays a role in receptor binding, or in receptor activation, or plays no role at all. This information is useful in the design of peptide mimetics for the use in species- or group-specific insecticides.

*Supervisor:* Professor Emeritus GE Jackson (Chemistry)
*Co-supervisor:* Professor HG Marco (Biological Sciences)

Bouanga Boudiombo, Jacky Sorrel
Thesis Title: *Molecular selectivity by Host-Guest methods*

Jacky Sorrel Bouanga Boudiombo matriculated from the lycée Paul Indjendjet Gondjout in Libreville, Gabon, in 2008. She then proceeded to the Cape Peninsula University of Technology where she was awarded the National Diploma in Analytical Chemistry (2012), the Bachelor of Technology and Master of Technology (2013, 2016) in Chemistry. She subsequently joined the Centre for Supramolecular Chemistry at the University of Cape Town where she undertook research in Physical Chemistry and Crystallography.

Jacky Sorrel Bouanga Boudiombo's thesis dealt with the separation of chemical isomers, compounds with the same chemical formula but differing atomic connectivity. These often display similar physical properties and are difficult to separate. She therefore employed the Host-Guest technique whereby a certain Host molecule can capture a particular Guest molecule from a mixture and does so selectively. Her work has elucidated aspects of this separation process at the atomic level and has contributed to the understanding of the forces impinging on the components of molecular solids.

*Supervisor:* Emeritus Professor LR Nassimbeni (Chemistry)
*Co-supervisors:* Professor S Bourne (Chemistry); A/Professor N Ravenscroft (Chemistry).

Chavula, Catherine
Thesis Title: *Using Language similarities in Retrieval for Resource Scarce Languages: A Study of Several Southern Bantu Languages*

Catherine Chavula completed her BSc, majoring in Computer Science at the University of Malawi, and MSc in Computer Science at Essex University. She joined UCT for her doctorate studies in 2014 in the Department of Computer Science.

Catherine Chavula's thesis examines whether using language similarities in search systems can improve the quality of search results for languages with limited published digital content. The study focused on several Bantu languages spoken in Malawi, Zambia, and South Africa. The thesis investigates the interaction behavior of users presented with search results written in related languages, and whether intelligibility factors, such as vocabulary similarity, can be used in ranking algorithms to improve the quality of search results. The findings show that users presented with search results written in related languages are able to complete their search tasks but become frustrated and experience negative emotions as the intelligibility of the search results decreases. Concerning ranking, integrating intelligibility and topical relevance factors in ranking search results improves the quality of search results. These findings provide opportunities for improving access to information for speakers of languages with limited resources, which is typical for many African languages.

*Supervisor:* Professor H Suleman (Computer Science)

Colville, Kevin William
Thesis Title: *An analysis of frictional effects in non-stationary contact problems for metal forming simulations*

Kevin Colville holds a BSc in Applied Mathematics and Physics, followed by a BSc(Hons) and MSc in Applied Mathematics, all from UCT. In 2008, he joined South Africa's national supercomputer facility, the Centre for High Performance Computing.

The manufacture of modern motor vehicles involves many metal panels that are welded together to form the body. Each panel has a complex shape and has to be made accurately and reliably, quickly and efficiently, using a stamping press. Kevin Colville's thesis developed a new mathematical formulation of friction, which plays an important role in the stamping and drawing processes used in the metal-forming industry. He accomplished this by including complex rotational effects of the material and surface in a mathematical model and devising a numerical algorithm that

could be effectively implemented in the computer programs that provide engineering simulations. Using standard benchmark metal-forming processes, he studied the effect of the new formulation, along with different friction models for differing metal-metal interactions. This study helps provide a more accurate calculation of the final shape of the metal parts and their mechanical characteristics, like strength, and helps engineers improve their designs to avoid defects in manufacture, such as wrinkling or tearing of the metal.

*Supervisor:* Dr H Laurie (Mathematics and Applied Mathematics)
*Co-supervisor*: Professor J Ronda (AGH University of Science and Technology)

Daniels, Graham Clinton
Thesis Title: *Observing flow using fast neutron radiography and positron emission particle tracking*

Graham Daniels graduated with a BSc, BScHons and MSc in Physics from the University of KwaZulu-Natal, with a focus on theoretical quantum mechanics. His subsequent employment at the South African Nuclear Energy Corporation (Necsa) in Pretoria led to his passion for accelerated-based applications, and was followed by his PhD studies. Graham Daniels' thesis focuses on the application of fast neutron radiography (FNR) and positron emission particle tracking (PEPT) to studying the dynamic flow of material in bulk. FNR is a technique which results in an image of energetic neutrons which are transmitted through a sample, and PEPT is a method of tracking the position of a radio-labelled tracer within the field-of-view of a positron emission tomography scanner. As part of the work, a new FNR system was developed and commissioned at Necsa. The new technique is illustrated with studies of the motion of media within a laboratory-scale tumbling mill, and the flow of water through porous media, which allows several useful parameters to be derived which have relevance in the optimisation of industrial processes. FNR measurements were made both at NECSA and the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany, and the PEPT measurements were undertaken at the facilities of PEPT Cape Town located at IThemba LABS near Cape Town.

*Supervisor:* Professor A Buffler (Physics)

De Vos, Lauren
Thesis Title: *Biodiversity patterns in False Bay: an assessment using underwater cameras*

Lauren De Vos holds a BSc, BSc (Hons) and MSc in Conservation Biology from UCT. She worked at the Save our Seas Shark Centre developing underwater camera monitoring methods, training conservation agencies and integrating science into management and public education as a researcher and science writer before starting her PhD. Lauren De Vos' thesis describes the marine biodiversity across False Bay using a fresh approach to submarine sampling. She used novel underwater cameras to derive an ecological perspective of the seafloor, and investigated the factors that drive patterns in invertebrate and fish communities. New scoring systems, paired with the camera technology, were evaluated and found to provide a framework for rapid assessments. Community composition differed between reef and sand, and among depth strata. The diversity of species was highest in the eastern region of the bay, outside the current protected area network and in areas not previously surveyed. This research provides a framework for monitoring ecosystem health in a coastal bay threatened by fishing, pollution, coastal development and desalination plants. In demonstrating how physical and biological data can be gathered simultaneously to improve ecosystem-level knowledge, Lauren De Vos' methods are more cost effective and cover a broader range of biodiversity than any method previously applied.

*Supervisor:* Associate Professor C Attwood (Biological Sciences)
*Co-supervisors:* Dr. A Bernard (South African Institute for Aquatic Biodiversity (SAIAB);
*Co-supervisor:* Dr. A Götz (South African Environmental Observation Network (SAEON)

du Plessis, Nadia
Thesis Title: *Late Holocene environmental and climate dynamics along the southern cape coast of South Africa: High resolution multi-proxy records from the Wilderness Embayment*

Nadia du Plessis completed her BSc (Environmental Statistics) at UNISA and BSc(Hons) in Environmental and Geographical Science at UCT, after which she engaged in full-time study towards her PhD. Nadia du Plessis's thesis centres on the generation and evaluation of palaeoenvironmental records from the Wilderness Embayment, southern Cape coast of South Africa. Her work produced high resolution multi-proxy (pollen, charcoal and geochemical) data that she used to identify and characterise two key periods within the recent geological past: the so-called Medieval Climate Anomaly and Little Ice Age. While several records exist from this region, Nadia's work represents the first records that are sufficiently highly-resolved to address questions relating to climate and vegetation change during the last one thousand years and therefore her thesis is an important contribution to the expanding body of work defining a baseline for natural environmental variability along the southern Cape coast.

*Supervisor:* Professor ME Meadows (Environmental and Geographical Science)
*Co-supervisors:* Dr BM Chase (University of Montpellier, Centre National de la Récherche Scientifique Montepellier, France); Dr Torsten Haberzettl (University of Greifswald, Germany); Dr LJ Quick (Nelson Mandela University)

Finger, Nikita Maxine
Thesis Title: *Habitat correlates of pulse parameters in the highly specialized acoustic system of Chiroptera*

Nikita Finger holds a BA/BSc degree (cum laude) with a minor in biology from the University of Central Florida (USA), a BScHons and MSc in Biological Sciences from UCT. She registered for her PhD in 2015.

Nikita Finger's thesis investigates how changes in the echolocation pulse parameters of clutter (densely vegetated) specialist foragers (horseshoe bats) allows them to occupy a wide variety of biomes, including open desert. In open environments, detecting prey further away could offer a significant ecological advantage. Nikita Finger therefore investigates whether there are differences in the pulse parameters of bats in cluttered and open habitats and whether these differences are due to local adaptation (hard wired) or behavioural flexibility. She used microphone array analysis combined with 3D scans of the environment to record bats flying in both a natural and experimental setting. She found that prey detection distances in different biomes were a consequence of both local adaptation (pulse frequency) and behavioural flexibility (pulse intensity). These findings have provided important insight into how bats use sonar to interface with their environment and how their environment in turn shapes these sonar systems.

*Supervisor:* A/Professor D Jacobs (Biological Sciences)
*Co-supervisor:* Dr M Holderied (University of Bristol, Biological Sciences)

Gabier, Hawwa
Thesis Title: *Label-free proteomic analysis of Xerophyta schlechteri leaf tissue under dehydration stress*

Hawwa Gabier completed her BSc and BSc (Masters) at the University of the Western Cape and began full-time study towards her PhD at UCT in 2013.

Hawwa Gabier's thesis reports on the proteomic analysis of Xeropyhta schlechteri leaf tissue under dehydration stress. X. schlechteri is a resurrection plant that can withstand desiccation stress, maintain this state for extended periods and regain full metabolic viability in vegetative tissue when rehydrated. Understanding the mechanisms underlying this desiccation tolerance phenotype could help improve drought tolerance in crop plants. She confirmed key proteins and pathways associated with desiccation tolerance and investigated metabolites associated with those pathways during validation of her results. She also performed dehydration stress and metabolite analyses on maize, a desiccation sensitive species. The comparison between these two monocotyledonous plant species can explain, in part, the desiccation tolerance of X. schlechteri and maize sensitivity to drought.

*Supervisor:* Dr MS Rafudeen (Molecular and Cell Biology)
*Co-supervisor:* Professor J Farrant (Molecular and Cell Biology)

Gebe, Zimkhita
Thesis Title: *The ecology of picophytoplankton in a coastal upwelling ecosystem*

Zimkhita Gebe obtained her BSc, BScHons and MSc degrees from the University of Fort Hare. She was an intern in various state departments for several years, gaining experience in marine research and participating in research cruises. In 2015 she joined UCT to commence her PhD studies.

Zimkhita Gebe's thesis focuses on picophytoplankton, an important but poorly understood group of marine micro-organisms invisible to the naked eye. Picophytoplankton are responsible for producing much of the oxygen we breathe and for maintaining balanced chemistry within ocean waters. To study these organisms off the west coast of South Africa, Zimkhita Gebe participated in eight research cruises and used additional at-sea sample collections to investigate their distributions and biological activity. She uses flow cytometry to count them, and laboratory analyses of seawater samples to relate abundances to characteristics of the marine environment. A series of laboratory experiments allows estimation of mortality rates through predation by single-celled predators and infection by viruses. Her results indicate spatial and temporal variability in picophytoplankton abundance, with environmental factors affecting their growth rates being countered by biological factors affecting their death rates. The group is shown to be abundant but not dominant in South Africa's coastal waters.

*Supervisor:* Associate Professor C Moloney (Biological Sciences)
*Co-supervisors:* Dr M Pfaff (Department of Environment, Forestry and Fisheries); Dr E Rocke (Biological Sciences)

Hague, Mark Christopher
Thesis Title: *Ice - Ocean - Atmosphere Interactions in the Southern Ocean and Implications for Phytoplankton Phenology*

Mark Hague completed his BSc and BScHons qualifications at UCT, after which he upgraded from an MSc to a PhD in 2017.

Mark Hague's thesis focuses on the unique interactions between Antarctic sea ice and phytoplankton. These microscopic algae form the basis of the marine food web and are an important part of the global carbon cycle. In the first part of his thesis, Mark makes use of observations collected by autonomous robots sampling under the Antarctic sea ice, revealing growth much earlier than had previously been shown. A second part of the thesis analyses this relationship between sea ice and phytoplankton in climate models, finding that misrepresentations of the Antarctic sea ice have a strong effect on how well the models are able to simulate the annual cycles of phytoplankton growth and decline in the region. A final section employs numerical simulations to investigate how the dynamic ice cover affects the seasonality of the underlying ocean through its control of atmosphere-ocean exchanges of heat and momentum.

*Supervisor:* A/Professor M Vichi (Oceanography)

Hillebrand, Malcolm
Thesis Title: *Chaotic dynamics of polyatomic systems with an emphasis on DNA models*

Malcolm Hillebrand studied Applied Mathematics and Physics at UCT, obtaining his BSc and BSc (Hons).

He started work on his MSc studies in 2018, and upgraded to PhD in 2019.

Malcolm Hillebrand's thesis provides new insight into the behaviour of DNA and graphene, using a multidisciplinary approach based on nonlinear dynamics. Combining aspects from high performance computing, pure mathematics, biological and statistical physics and chaos theory, he investigates the effect of base-pair heterogeneity on the stability of DNA molecules by computing the maximum Lyapunov Exponent (mLE), as well as the occurrence probability and lifetimes of thermal openings (bubbles) in the double helix. These results represent an important step in the study of transcriptionally significant DNA segments, as these regions exhibit particularly large, long-lived bubbles with relatively high probability. Further, he studies the dynamical stability of graphene using the mLE, finding results confirming that chaos is a slow process in graphene, even in narrow-width nanoribbons. Both these studies advance the understanding of how chaotic dynamics can be used to provide valuable knowledge about physical systems.

*Supervisor:* A/Professor H. Skokos

Hlozek, Jason Peter James
Thesis Title: *Molecular modelling of bacterial polysaccharide antigens to inform future vaccine development*

Jason Hlozek completed his BSc and BSc(Hons) Computer Science qualifications at UCT, before proceeding to full-time PhD studies in computational analysis of vaccine components.

Jason Hlozek's thesis investigates the carbohydrate structures on the surface of Neisseria meningitidis and Shigella flexneri bacteria to aid the development of future vaccines. Meningitis and diarrheal disease are prominent causes of sickness and death, particularly in low-income countries. Vaccines prevent infection by specific bacterial serotypes, occasionally extending to cross-protect against structurally similar non-vaccine serotypes. His research with computational models of the serotype-defining carbohydrates of meningococcal bacteria identified the need for a serogroup X vaccine component for broad vaccine coverage. Further, a synthetic mimic of serogroup A was found to be unsuitable as a replacement for current serogroup A vaccines. His research went on to analyse the structures of Shigella flexneri serogroups Y, 2, 3, and 5 and found that broad protection could occur from a vaccine comprising just serotypes 2a (with O-acetylation) and 3a. These findings serve to guide the rational design of multivalent vaccines against meningitis and diarrheal infections.

*Supervisor:* A/Professor N. Ravenscroft (Chemistry)
*Co-supervisor:* A/Professor M.M. Kuttel (Computer Science)

Kravitz, Jeremy Alan
Thesis Title: *Towards high fidelity mapping of global inland water quality using earth observation data*

Jeremy Kravitz completed his BSc at California Polytechnic State University, San Luis Obispo, USA. Jeremy joined UCT in June, 2016 to start an MSc degree, in which he was eventually upgraded to a PhD student. Before joining UCT, he worked throughout the Caribbean studying coral reefs.

Jeremy Kravitz's thesis provides significant contributions towards water quality retrieval using satellite imagery. His thesis includes an assessment of the current state-of-the-art for phytoplankton biomass retrieval. This work included multiple field sampling campaigns to various inland water reservoirs within the Gauteng province of South Africa where he oversaw the collection and analysis of water quality information and optical data. This provided valuable validation data for assessments of atmospheric corrections and analytical water quality retrieval models. He further used radiative transfer modeling to develop a novel synthetic dataset of paired satellite sensor-specific reflectances and aquatic variables specific to inland waters. The state-of-the-art dataset includes novel parameterisations for phytoplankton and signal contamination effects, which have previously hindered aquatic radiative transfer modeling. The dataset was used to train and test multiple machine learning models for multi-parameter retrievals and cross-sensor capability. The work demonstrates the capability of developing globally applicable water quality retrieval models using machine learning at high spatial, and temporal resolutions.

*Supervisor:* Dr S Fawcett (Oceanography)
*Co-supervisor:* Dr M Matthews (CyanoLakes (Pty) Ltd.), Dr. Stewart Bernard (CSIR)

Laidler, Christopher Basil
Thesis Title: *GPU acceleration of the frequency domain acceleration search for binary pulsars*

Christopher Laidler completed his BSc and BSc(Hons) in computer science at UCT, and began his PhD in 2011.

Christopher Laidler applied the techniques of high-performance computing to the field of radio astronomy, specifically the search for new pulsars. His thesis describes the acceleration of the digital signal processing pipeline of the frequency domain acceleration search, which is used to detect the faint signals of binary pulsars in radio telescope observations. Christopher Laidler ported an existing algorithm to the massively parallel Graphics Processing Unit architecture. By exploiting multiple levels of parallelism and implementing a number of low level optimisations, he was able to speed up the search by more than 70 times. These reductions in the time and cost required to perform this search allow it to be performed in real-time, a requirement for the next generation radio telescopes such as the Square Kilometre Array.

*Supervisor:* A/Professor M Kuttel (Computer Science)

Lupuwana, Vuyiswa Thembelihle
Thesis Title: *Living on the margins: an archaeology of 19th century Karoo rural dwelling*

Vuyiswa Lupuwana completed her BA and BA Hons, in both Film and Media Studies and Archaeology, at UCT. She completed an MPhil in 2017, and began full-time study towards her PhD in the same year.

Vuyiswa Lupuwana's thesis applies an archaeological approach to the transition of subsistence pastoralism to commercial pastoralism between the early and later 19th century, when merino wool production became the mainstay of the rural Karoo economy. She does this through an examination of unique vernacular corbelled houses that emerged as a dwelling type in the early Cape frontier. She confirms that this dwelling type persists into the later 19th century and was used by farm workers, share-croppers and landowners alike. Her analyses of household purchasing power from the material record charts the economic marginalisation of the landless and rural poor, as landowner economic distance is expressed by a move towards Victorian dwellings. She concludes, that the material record of individual households provides a means of identifying the local, and variable experiences of Karoo dwellers, and their entry into later 19th century global economies.

*Supervisor:* Emeritus A/Professor SL Hall (Archaeology)

Mabhula, Amanda Nomakhosi
Thesis Title: *Investigating permeation of anti-mycobacterial agents in Mycobacterium tuberculosis and M. tuberculosis-infected macrophages in vitro as a model for early stage tuberculosis drug discovery*

Amanda Mabhula holds a BSc from the University of Fort Hare, BScHons (Chemistry) from Rhodes University and an MMedSc (Medical Microbiology) from the University of Kwazulu-Natal. She began her PhD studies in 2016, working on a multidisciplinary project combining pharmacology, medicinal chemistry and microbiology towards new tuberculosis drug development.

Amanda Mabhula's thesis investigated the development of a macrophage infection model to predict the ability of experimental anti-bacterial drugs to penetrate infected cells and to determine the extent to which intracellular drug concentrations translate into effective killing of Mycobacterium tuberculosis. In a multi-disciplinary approach, Amanda Mabhula profiled key drug properties of novel antimycobacterial agents, determined their in vitro metabolism by host and bacterial cells, and investigated their propensities for intracellular accumulation. These data were used to establish potential correlates with intracellular drug efficacy in infected macrophages displaying different phenotypes thought to be present during natural tuberculosis infection. Her results reveal that the intracellular efficacy of anti-tuberculosis drugs depends on both their inherent activity and lipophilicity-driven accumulation and, moreover, that lipid bodies in foamy macrophages are differentially beneficial for cidal versus static drugs. The model developed in this work will facilitate rational design and progression of lead compounds in pre-clinical development.

*Supervisor:* Professor K Chibale (Chemistry)
*Co-supervisors:* Professor DF Warner (Pathology); A/Professor L Wiesner (Medicine)

Maliwatu, Richard
Thesis Title: *A new connectivity strategy for wireless mesh networks using dynamic spectrum access*

Richard Maliwatu holds a BSc in Computer Science from the Copperbelt University, Zambia and multiple industry certifications (Network+/CCNA/MCSE). He completed a BScHons specialising in Information Technology in 2012, and an MSc in Computer science at UCT in 2014. He began full-time study towards his PhD in 2015.

Richard Maliwatu's thesis revisits the connectivity strategy in Wireless Mesh Networks (WMN) using Dynamic Spectrum Access and reports on the experimental performance analysis of hybrid back-haul links operating in the 5 GHz and UHF bands. The results show that overall network optimisation requires a combination of low frequency and high frequency radios. He develops a multi-radio utilisation framework and proposes an adaptive round-robin (ARR) based algorithm for efficient multi-link utilisation. Numerical analysis indicates that ARR improves throughput by 75%. In addition, he highlights inadequacies of WMNs complying with applicable television white space (TVWS) regulations and proposes a new mesh formation algorithm that fulfills the constraints of TVWS regulations. This work contributes to providing improved broadband capacity and coverage in developing countries -an area identified as critical for economic development in South Africa's National Development plan.

*Supervisor:* Dr D Johnson (Computer Science)
*Co-supervisor:* Dr M Densmore (Computer Science)

Many Manda, Bertin
Thesis Title: *Nonlinear dynamics and chaos in multidimensional disordered Hamiltonian systems*

Bertin Many Manda obtained a BSc and MSc in Physics from the University of Yaounde I, and an MSc in Mathematical Sciences from the African Institute for Mathematical Sciences in Cameroon. He joined UCT in 2017 for his PhD degree.

Bertin Many Mandy's thesis focuses on the chaotic behaviour of some fundamental mathematical models used to study various physical processes such as the conductivity of materials and the propagation of light in optical fibres: the disordered nonlinear Schrodinger equation in one and two spatial dimensions. In his investigations he uses analytical and numerical approaches of nonlinear dynamics to understand the role of chaos in the spreading of initially localised energy excitations, which are known to remain localised when nonlinear interactions are absent. He finds that although the strength of chaos decreases in these processes, following

specific, well defined general laws, it continues determining the asymptotic evolution of energy propagation. Moreover, he shows that localised chaotic spots randomly meandering inside the systems' excited parts are responsible for the observed energy spreading. These findings significantly advance our understanding on the fate of energy diffusion in nonlinear disordered media.

*Supervisor*: A/Professor H Skokos

Mathoho, Ndivhuho Eric
Thesis Title: *Archaeology and archaeometallurgy in Limpopo Province of South Africa: case studies of early Iron Age sites of Mutoti and Thomo*

Ndivhuho Eric Mathoho completed a BA and BA(Hons) in Archaeology at Univen, an MPhil in Archaeology at UCT, and began full-time study towards his PhD in 2017.

Ndivhuho Eric Mathoho's thesis reports on the history of settlement in current day Limpopo by farmers from the mid-first millennium AD using techniques from archaeology and archaeometallurgy. The evidence gathered showed interaction between various groups that made different ceramics belonging to Kwale and Kalundu branches. Such interaction processes culminated into Garonga (AD 650-850). Archaeometallurgical techniques identified iron working practices that sustained agricultural economies. The iron was produced on a large scale, using local resources. Presumably, the iron and other localised resources fed into internal and international circulation networks. The findings of this thesis build and expand on the existing Iron Age knowledge in the study area, especially in the areas of technology and its articulation with societal change. Although no complex societies are known in this area during the first millennium AD, communities had access to exotics such as ceramics from Syria. Overall, the thesis exposes a very rich history of indigenous technological achievements before colonisation.

*Supervisor:* Professor Shadreck Chirikure (Archaeology)

Mguda, Zolile Martin
Thesis Title: *Bent tail radio sources as tracers of galaxy clusters at high redshift and SMBH mass estimates*

Zolile Mguda completed his BSc and BSc(Hons) in Mathematics at the University of Fort Hare, and MSc in Astrophysics at UCT.

Zolile Mguda's thesis investigates the methods used in measuring supermassive blackhole masses (SMBH) in the local and high redshift Universe. The SMBH masses are a vital part in the study of AGN radio jets. Bent tail radio sources (BTRSs) are formed when ram pressure, because of the motion of the host galaxy in a dense environment, causes a C-shaped bend on the AGN jets that it acts on. He uses cosmological simulations to investigate this bending phenomenon. He showed that the conditions for jet bending are prevalent in galaxy clusters and are rare in galaxy groups. Though, the prevalence of galaxy groups compared to galaxy clusters makes it equally likely that a distant BTRS is in a cluster or group. However, it is only in clusters that one is likely to find two BTRSs in close proximity. The conclusion is that BTRSs trace agglomeration of galaxies and not just galaxy clusters.

*Supervisor:* Dr KJ van der Heyden (Astronomy)
*Co-supervisor:* Dr P Vaisanen (Astronomy)

Muhie, Seid Kassaw
Thesis Title: *A probabilistic approach to a classical result of ore*

Seid Kassaw Muhie holds his BEd and MSc degrees in Mathematics from Wollo and Bahir Dar Universities respectively, Ethiopia. He joined UCT in 2018 as part of a programme between Woldia University and UCT. He is the first student in the programme to complete his PhD in 2020.

Seid Kassaw Muhie's thesis deals with the probability of commuting subgroups in arbitrary subgroup lattices, focusing on structural properties of distributive lattices in terms of a new probabilistic approach. The original idea goes back to a seminal paper of O. Ore 1938, largely studied in pure and applied mathematics, but the methods are very recent and proper of the Algebraic Combinatorics. Among the new ideas, there is a counting argument for the pairs of commuting subgroups via a new graph. Connections with Graph Theory and Combinatorics interested another international project between Italy and South Africa (ISARP 2018-2020), in which Seid Kassaw Muhie was actively involved. This PhD thesis benefited of the activities of ISARP 2018-2020.

*Supervisor:* Dr FG Russo (Mathematics and Applied Mathematics)

Ndamyabera, Christophe Adrien
Thesis Title: *Porous metal-organic frameworks for sorption of volatile organic compounds*

Christophe Adrien Ndamyabera completed his BSc(Hons) degree at the National University of Rwanda, his MSc at the University of the Western Cape, and joined the Centre for Supramolecular Chemistry Research at UCT for his PhD studies in 2017.

Volatile organic compounds (VOCs) are natural or synthetic compounds with an appreciable vapour pressure at ambient temperature. Some VOCs have been implicated in causing air pollution, and are partly responsible for the generation of photochemical ozone and smog precursors. The main scope of Christophe Adrien Ndamyabera's thesis is to design and employ metal-organic frameworks (MOFs) as solid state sorbents for several different classes of VOCs. The ability of MOFs to respond to different chemical and physical environments is enhanced by introducing flexibility in the pyridylcarboxylate organic linkers. Porous MOFs are reported in the thesis, and their ability to take up VOCs is evaluated. A hinge-like mechanism in zinc(II) and cobalt(II) MOFs with mixed pyridylcarboxylate linkers proved critical in expansion or contraction of the guest-accessible void, and separation of closely related halogenated VOCs was achieved. The same MOFs can be used for sorption of hydrogen and carbon dioxide gases. Several MOFs showed visible colour

changes on exposure to specific VOCs, which was reversible on desorption. Kinetics studies of these processes gives insight into the mechanisms responsible for the observed colour changes.

*Supervisor:* Professor SA Bourne (Chemistry)
*Co-supervisor:* Dr CL Oliver (Chemistry)

Nyamushosho, Robert Tendai
Thesis Title: S*tates, agency, and power on the 'peripheries': exploring the archaeology of the later Iron Age societies in precolonial Mberengwa, CE 1300-1600s*

Robert Nyamushosho holds a BA Honours degree in Archaeology, Cultural Heritage and Museum Studies from the Midlands State University, Zimbabwe. He joined the Department of Archaeology at UCT in 2014 for his MPhil studies which he completed in 2016, and began full- time study towards his PhD in 2017.

Robert Nyamushosho's thesis refocuses the archaeology of pre-colonial states in southern Africa to regions previously dismissed as marginal and agriculturally unproductive to sustain successful communities. Research at Chumnungwa in the Mberengwa area of Zimbabwe identified state systems that thrived in drylands. Rather than being vulnerable to droughts, high temperatures, and tsetse flies, communities residing in these drylands developed innovations and networks at local, regional and international levels. Chumnungwa successfully interacted and competed with contemporary states such as those at Danamombe, Great Zimbabwe, Khami and other places. These findings suggest that it is only a historical invention that can marginalise some landscapes as 'peripheral', especially in the absence of research, but once attention is directed to them, multiple layers of agency and entangled histories emerge.

*Supervisor:* Professor S Chirikure (Archaeology)

Paradza, Masimba Wellington
Thesis Title: *Applications of extensive and non-extensive statistics to high energy physics*

Masimba Paradza obtained an undergraduate degree from the Midlands State University in Zimbabwe in 2004, a BScHons in Astrophysics and Space Science from UCT in 2006, and an MSc from Rhodes University in 2009.

For his doctoral research Masimba Paradza visited the Large Hadron Collider facility located in Geneva, Switzerland, and used the data obtained there for the results described in his thesis. The Large Hadron Collider accelerates particles to the highest energies available in the world and is designed to make new discoveries in the field of particle physics. He also did research at the Joint Institute for Nuclear Research (JINR) in Dubna near Moscow, Russia. In this thesis he investigates the final state in proton - proton collisions and heavy ion collisions as a function of their transverse momentum using the Tsallis distribution. He also presents an analysis of integrated particle yields as a function of the charged-particle multiplicity measured at central rapidity in proton-lead collisions at the Large Hadron Collider.

*Supervisor:* Emeritus Professor J Cleymans (Physics)
*Co-Supervisor:* Emeritus Professor CA Dominguez (Physics)

Platts, Emma Danielle
Thesis Title: *Computational Analysis Techniques using Fast Radio Bursts to Probe Astrophysics*

Emma Platts completed her BSc, BSc (Hons) and MSc qualifications at UCT, and began full-time study towards her PhD in 2018.

Emma Platts' thesis provides an analysis of Fast Radio Bursts (FRBs)—an enigmatic type of astrophysical transient—and demonstrates computational techniques that can be used to study the FRB events and the Universe around them. She uses current (limited) observations of FRBs to derive an upper bound on the baryonic content of the Milky Way Galactic halo using kernel density estimation. The model developed is expected to provide valuable constraints once thousands of FRBs are detected in the near future. She then uses autocorrelation functions to study the structure of several bursts from an FRB detected by the MeerKAT radio telescope in South Africa. The results provide information on the FRB local environment and host Galaxy, as well as on possible FRB progenitors.

*Supervisor:* Professor A Weltman (Applied Mathematics)
*Co-supervisor:* Doctor JP Shock (Applied Mathematics)

Quagraine, Kwesi Akumenyi
Thesis Title: *Dynamics of co-behaviour of climate processes over Southern Africa*

Kwesi Quagraine holds a BSc (Hons) Physics and an MSc Physics (Meteorology) from the University of Cape Coast, Ghana. He joined UCT in 2016 for his PhD studies in the Department of Environmental and Geographical Science.

Kwesi Quagraine's thesis presents a pioneering way of investigating the co-behaviour of large-scale climate processes over southern Africa. The concept of co-behaviour and the methodology developed provides a novel approach to better understand the influence of the different combining mechanisms driving the regional climate of southern Africa as this establishes the environment for surface responses such as precipitation and temperature. The strength of the methodology lies in the fact that it is possible to be applied to any region with no singular driver of the climate. The evidence shows that co-behaviour has varied influence on the regional precipitation and temperature of main rainfall regions of southern Africa, with the summer rainfall region particularly affected strongest. The work further examined global climate model representation of co-behaviour and their sources of variability. This thesis brings added value to the broader discourse of climate variability and serves to

underpin future work to advance the understanding of co-behaviour in Africa, which is largely vulnerable to climate change impacts.

*Supervisor:* Professor B Hewitson (Environmental and Geographical Science)
*Co-supervisor:* Dr C Jack (Environmental and Geographical Science)

Rice, Wayne Stanley
Thesis Title: *Change begets change: employing a change perspective to inform South Africa's coastal and marine community conservation policy-praxis disjuncture*

Wayne Rice holds BSc and MEd degrees from Stellenbosch University and the University of Tasmania respectively. He joined UCT in 2014 to pursue an MPhil in Environment, Society and Sustainability, and commenced his PhD studies in 2015.

Wayne Rice's thesis focuses on the factors, conditions and processes that enable and constrain community conservation governance in South African coastal areas. He uses commons and governance theory, and theory of change approach to investigate this. He firstly explores the community conservation literature to identify common enabling and constraining factors for community-based conservation, and then drawing on governance and change theory, develops a 'Generic Theory of Change Pathway' that provides a conceptual framework for the study. He then investigates how the change to community-based conservation governance unfolded in two regional case studies, and one national case-in-progress. Finally, using these empirical findings he develops a 'South African Empirical Theory of Change Pathway' to make recommendations for improving implementation and governance of coastal community-conserved areas in the country. These recommendations will be useful in planning, implementing and managing future community-conserved areas in the country to better deliver positive social and ecological outcomes.

*Supervisor:* A/Professor M Sowman (Environmental and Geographical Science)
*Co-supervisor:* Professor Dr A Bavinck (University of Amsterdam, Geography)

Rink, Ariella Nikia
Thesis Title: *Behavioural, microhabitat, and phylogenetic dimensions of intrasexual contest competition in combatant monkey beetles (Scarabaeidae: Hopliini)*

Ariella Rink completed her BSc and BScHons qualifications in Biological Sciences at UCT. She registered for an MSc in Ecological Statistics at the institution in mid-2015 and upgraded to a PhD in mid-2017.

Ariella Rink's thesis commences with a study that evaluates the evidence for sexual selection as a driver of enlarged and exaggerated hind legs in male monkey beetles that fight one another for reproductive access to females. She continues on to assess the potential for differences in the fighting arena to drive divergence in hind leg form among spatially-separated populations that are genetically distinct. Using the latest statistical tools to describe form and phylogeny, she quantifies the extent to which several possible causes of evolutionary constraints may have influenced hind leg diversification in these beetles. These findings are important contributions to our understanding of insect radiations in the Cape Floristic Region and to our understanding of the role of sexual selection on speciation in general.

*Supervisor:* A/Professor R Altwegg (Statistical Sciences)
*Co-supervisor:* Dr JF Colville (South African National Biodiversity Institute and Statistical Sciences); Dr RCK Bowie (Evolutionary Biology, University of California Berkeley)

Senapathi, Tharindu Nuwan
Thesis Title: *Development of a computational platform for system based drug discovery demonstrated on pneumococcal sialidases*

Tharindu Senapathi received his BSc(Hons) degree in Chemistry from the University of Sri Jayewardenepura, Sri Lanka. In 2015 he was accepted into the MSc programme in Computational Science at the Scientific Computing Research Unit (SCRU) at UCT, and after completing this, embarked on full-time study towards his PhD.

Tharindu Senapathi's thesis reports the development of the Biomolecular Reaction and Interaction Dynamics Global Environment (BRIDGE) open platform for computational biology and chemical research. BRIDGE is the first open source platform offering accessibility, transparency, shareability, and reproducibility of biomolecular modelling methods and data. It forms a link between genomics, proteomics and chemical computation for biomedicine. Combined with advanced SCRU software, the functionalities of high throughput BRIDGE tools and workflows demonstrated on three sialidases from Streptococcus pneumoniae; NanA, NanB, and NanC which are responsible for influenza co-infections. These sialidases cooperatively catalyse the removal of sialic acid from cell surface glycans. BRIDGE tools connected together as workflows were used to calculate the binding free energies of known inhibitors of Streptococcus pneumoniae sialidases as well predict novel potential lead molecules based on the mechanistic details obtained from the simulations. The tools developed in the thesis opens up the pathway to high throughput drug development.

*Supervisor:* Professor KJ Naidoo (Chemistry)
*Co-supervisor:* Dr CB Barnett (Chemistry)

Senyange, Bob
Thesis Title: *Chaotic behaviour of disordered nonlinear lattices*

Bob Senyange holds a BSc and MMath degree in Mathematics from Makerere University, Uganda. He joined the Department of Mathematics and Applied Mathematics at UCT in 2016 for his PhD studies. Before joining UCT, he worked as an Assistant Lecturer of Mathematics at Muni University in Uganda.

Bob Senyange's thesis focuses on the mechanisms of energy transport in multidimensional heterogeneous lattice models, studying in particular the case of the Klein-Gordon model of

coupled anharmonic oscillators in one and two spatial dimensions. He reports the effects of the type of the impurity (heterogeneity) parameter on the systems' transport properties and classifies the transport mechanisms of the nonlinear versions of the models into various dynamical regimes. He also identifies computationally efficient numerical integration techniques, including the so-called symplectic integrators, and implements them for studying these models. Finally, he performs an extensive numerical investigation of the dynamics of the considered models revealing that for their nonlinear versions chaotic transport persists and chaotic hotspots meander in the region of energy concentration supporting the spreading mechanism.

*Supervisor:* A/Professor H. Skokos (Applied Mathematics)

Van Blerk, Justin James
Thesis Title: *The effect of altered rainfall seasonality on post-fire recovery of Fynbos and Renosterveld shrublands in the Cape Floristic Region*

Justin van Blerk completed his BSc, BSc Honours and MSc qualifications at UCT before spending a year as a research technician building a large rainfall-manipulation experiment in the field. This experience catalysed his desire to complete his PhD, which he began, full-time in 2017.

Justin van Blerk's thesis reports on the results of a multi-year rainfall seasonality manipulation experiment in two highly biodiverse vegetation types, Fynbos and Renosterveld shrublands. In doing so, Justin tackles the question of how aspects of our unique South African biodiversity might respond to climate change. During the course of his research, Justin made over 60,000 measurements of plant regrowth after fire in the field. The result of these painstaking measurements has been an unprecedented view into the post-fire ecology of these shrublands. At all levels of investigation, the Fynbos was relatively insensitive to variations in seasonality relative to the Renosterveld. These marked differences amongst neighbouring and structurally similar shrublands, highlights the importance of fine-grained ecological knowledge when predicting the impact of climate change on biodiversity.

*Supervisor:* A/Professor AG West (Biological Sciences)
*Co-supervisor:* Professor MT Hoffman (Biological Sciences)
*Co-supervisor:* A/Professor R Altwegg (Statistical Sciences)

Winberg, Marlien Marlene
Thesis title: *Stories of war and restitution: curating the narratives of the !xun storyteller Kapilolo Mahongo (1952 – 2018)*

Marlene Winberg holds a BA and MAFA from UCT. She joined the Department of Archeology in 2017 to pursue her PhD studies.

Marlene Winberg's thesis documents a body of oral narratives from the Angolan born !xun San storytellers now living in the Northern Cape Province of South Africa. By focusing on the specific stories of the late Kapilolo Mahongo, she demonstrates how anti-colonial narratives are embodied in specific and multiple histories and cannot be collapsed into homogenized narratives. This thesis documents the first Indigenous perspective on the 20th century Border Wars. She went on to examine the role of auto-ethnographical research in curating Indigenous stories globally. Marlene Winberg's findings report on how storytelling in indigenous epistemologies are knowledge producing and disruptive of colonial narratives, while supporting recovery from the post-traumatic effects of dispossession and war among indigenous communities.

*Supervisor:* Emeritus A/Professor Simon Hall (Archaeology)

MASTER OF PHILOSOPHY

Cossa, Adele
Kassam, Zain Liaquat
Montsho, Oduetse
Pienaar, Celia

MASTER OF SCIENCE

Abdullahi, Tassallah Amina (with distinction in the coursework component)
Adaramola, Rhoda Fiyinfoluwa
Angobe, Aune Tuyoleni (with distinction)
Baliwe, Ndiviwe Gabriel (with distinction)
Beckering Vinckers, Ulrich Karoo (with distinction)
Bonokwane, Kelebogile Verginia Stephanie
Brache, Chad (with distinction)
Chang, Patrick Chih-Kai (with distinction)
De Jager, Kristin Nicholas
Donnelly, Kieran Bryce
Drake, Rachel Katherine (with distinction)
Du Plessis, Monique (with distinction)
Farre, Ruth Elizabeth
Faure Beaulieu, Nina (with distinction)
Finlay, Christopher Jackson (with distinction)
Forrer, Heather Jean (with distinction)
Gawronsky, Marcus Matthew
Germishuizen, Matthew
Goosen, Kelly Lee (with distinction in the coursework component)
Grunow, Ernst Wilhelm
Gwynn, Timothy David (with distinction)
Hall, Andrew John
Hank, Nadine Alexandria Nomhle
Henry, Sabine Laurence
Ikhizama, Grace Airenghe
Janse Van Rensburg, Petronella (with distinction in the coursework component)
Joshi, Nivedita
Katende, Simon Peter
Khumalo, Vamumusa Malusi
Legae, Oratile
Louw, Tayla Susan
Mahlaba, Simlindile Fundiswa Miranda
Maritz, Liezl (with distinction)
Masetlwa, Nkosinathi Goodboy (with distinction)

Mbaka, Sarah Kerubo
Mcalery, John Alexander
Mtetandaba, Aphiwe Lucia
Ngwenya, Blessed Arthur (with distinction)
Opie, Brandon Michael (with distinction in the coursework component)
Perumal, Sameshan (with distinction in the coursework component)
Pillay, Prinavan
Reeler, James Jackson (with distinction in the coursework component)
Robbins, Amanda Elaine
Shikesho, Saima Dhiginina
Sidre, Stelvio Dayson Facatino Vaz
Thoithi, Wanjiru (with distinction)
Trapani, Isabella (with distinction)
Van Der Merwe, Ruan Henry (with distinction in the coursework component)
Van Munster, Stephany (with distinction)
Womack, Ashleigh Catherine Stevenson
Woolley, Megan Rose (with distinction)
Zambezi, Samantha

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Nemushungwa, Mufunwa
Ngumbulu, Gerald Joshua
Nzuza, Nontobeko Thandeka

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Pillay, Vineshree
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Yaphi, Chumisa
Zeeman, Willem Daniël
Zhang, Carol
Zinman, Paige Shira Nili (in the first class)

## BACHELOR OF SCIENCE

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Chauke, Amukelani Charles

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Damon, Hishaam
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El-Saidy, Mohamed Fouad
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Esteves, Gabriela Pegado
Euston-Brown, Angela Frances (with distinction in Economics, Environmental & Geographical Science, Applied Statistics and the degree with distinction)
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Fairall, Elizabeth Pamela (with distinction in Astrophysics, Physics and the degree with distinction)
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Fick, Kelly Nicole
Fieggen, Liam Anthony
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Francis, Rifqah
Freislich, Emma
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Garces, Nathan Mark (with distinction in Business Computing, Computer Science and the degree with distinction)
Garlick, Jessica Chelsea (with distinction in Human Anatomy & Physiology)
Gilbert, Lauren
Gilmour, Kelly (with distinction in Applied Biology and Marine Biology)
Godfrey, Kelly Robyn
Grose, Elizabeth Ann (with distinction in Human Anatomy & Physiology)
Grygier, Silas Lennart (with distinction in Computer Science)
Gwebu, Wandile Briliant
Hamilton, Joel Vincent (with distinction in Computer Science)
Hampton, Erin Rose (with distinction in Economics)
Harris, Nicole Lauren
Hashim, Nur-Ayn (with distinction in Applied Mathematics and the degree with distinction)
Hassim, Laaiqah
Havemann, Jenna Jade
Hendricks, Sumaiyah
Hove, Tatenda Ivy
Ibrahim, Naida Kassim (with distinction in Human Anatomy & Physiology)
Ince, Rachel Amy
Jacobs, Ross Lawrence (with distinction in Ocean & Atmosphere Science)
Jagganath, Ishaan
James, Kili Marie Webster
January, Leanne Karen (with distinction in Computer Science)
Jia, Yu Fei (with distinction in Human Anatomy & Physiology, Genetics and the degree with distinction)
Kalil, Katelyn Jean
Kalinde, Tarisai Stephen
Kamadu, Daryl (with distinction in Biochemistry, Genetics and the degree with distinction)
Kasa, Sisipho
Kekana, Noko Anthony
Kgwahla, Kagiso
Khalfe, Tawfeeq Ahmed
Kievits, Michael Anthony Robert
Kotze, Daniël (with distinction in Applied Biology, Human Anatomy & Physiology and the degree with distinction)
Kühn, Astrid Elizabeth
Kundieko, Sagel Julia (with distinction in Human Anatomy & Physiology, Genetics and the degree with distinction)
Kunene, Siphiwe Emmanuel (with distinction in Astrophysics)
Kunene, Zinhle Ziphelele
Lalli, Suvitha
Lazenby, Emily
Lee, Casey
Lehmann, Jaime Anne
Leroko, Esther
Levieux, Jordan Peter
Lewison, Adam Charles
Lipshitz, Marc Sydney
Lombard, Belinda
Lombard, Tamryn Nicole
Lorgat, Tariq
Lurie, Avi Hillel (with distinction in Computer Science and the degree with distinction)
Lurie, Jarryd Ethan

Mabasa, Duncan Xihlovo
Mabaso, Tsietsi Daniel
Mabena, Thembelihle Loyiso Leeroy
Madell, Kezia Alice
Madinga, Yandisa
Madlingozi, Lonwabo
Madokwe, Phiwaba
Madolo, Mbalentle Yolanda
Mafeking, Seliyanda Mveli
Mafumo, Nyasha
Magqaza, Onke
Mahomed, Naadhirah
Makgoleng, Nkopodi Diphetogo
Malapela, Bonolo
Malawu, Siyamanga
Mali, Asemahle
Maluleke, Nicky
Mangaliso, Zimasa
Mangena, Mashohle Boizy
Mapiti, Sanaga Daniel
Mapoulo, Makgabo
Marope, Malebo
Martin, Danielle
Marx, Oliver James
Mashaba, Pearl Ndzalama
Mashile, Blessing Lehlohonolo
Mashile, Tokelo
Masombuka, Nkanyiso Trevor
Matela, Motshidisi
Matshoba, Lindelwa
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Mbunge, Sesethu
Mccarley, Sarah (with distinction in Genetics)
Mcdonald, Victory Kathrean
Mcgown-Withers, Max Hoad
Mcmichael, William Andrew (with distinction in Applied Mathematics)
Mdoda, Sandisiwe Sibulele
Mfana, Siwaphiwe
Mgwiji, Aphiwe
Miloszewski, Luke Frank (with distinction in Computer Science, Applied Statistics and the degree with distinction)
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Mlangeni, Moses
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# UNIVERSITY OF CAPE TOWN

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An inclusive and engaged research-intensive African university that inspires creativity through outstanding achievements in learning, discovery and citizenship; enhancing the lives of its students and staff, advancing a more equitable and sustainable social order and influencing the global higher education landscape.

## Mission

UCT is committed to engaging with the key issues of our natural and social worlds through outstanding teaching, research and scholarship. We seek to advance the status and distinctiveness of scholarship in Africa through building strategic partnerships across the continent, the global south and the rest of the world.

UCT provides a vibrant and supportive intellectual environment that attracts and connects people from all over the world.

We aim to produce graduates and future leaders who are influential locally and globally. Our qualifications are locally applicable and internationally acclaimed, underpinned by values of engaged citizenship and social justice. Our scholarship and research have a positive impact on our society and our environment.

We will actively advance the pace of transformation within our University and beyond, nurturing an inclusive institutional culture which embraces diversity.

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***Note:***
As of January 2015, the levels of individual donors' giving circles have changed as follows:

- Chancellor's circle: formerly R250 000+, now R500 000+;
- Vice-Chancellor's Circle: formerly R100 000 – R250 000, now R250 000 – R500 000;
- Dean's circle: formerly R60 000 – R100 000, now R100 000 – R250 000;
- Friends of UCT: formerly <R60,000, now <R100,000.

Please note that these changes only affect donations received after 1 January 2015. All donors who were members of particular circles prior to January 2015, will continue to be recognised in their original circles, until the rolling five-year giving period has elapsed.

*We apologize for any omissions or errors. If you would like to query your donations totals, circle membership, or any other matter related to your gifts to UCT, please email giving@uct.ac.za.*

*A full list of UCT donors is also available at www.uct.ac.za/main/donating-to-uct/donor-recognition.*

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*Welcome, Wamkelekile, Welkom – today is not the end of your relationship with the university but the beginning of a new phase in your continuing relationship with UCT, one that you share with the UCT community of over 100 000 alumni.*
*Diverse as this community is, the shared experiences of a critical academic ethos and a spectacular campus make for a strong network that has a wide footprint, not only in South Africa, but across the continent and the globe.*

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*Updates can be done on the web – http://www.uct.ac.za/dad/alumni/update/*
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