FACULTY OF SCIENCE

DEAN: PROFESSOR N CHETTY BSc(Natal) BSc Hons Physics (Natal) MS Physics (Illinois Urbana-Champaign) PhD Physics (Illinois Urbana-Champaign) MSAIP MASSAf MRoySocSA

Master of Science

ACHIENG, Pamela Akuku (with Distinction) Archaeology
DISSERTATION: A taphonomic analysis of the ungulate fauna from the early Howiesons Poort at Klasies River main site

ADJORLOLO, Zeria Geography, Archaeology and Environmental Studies
DISSERTATION: Geomorphic thresholds and the characteristics of Vetiver grass in a mined landscape in eastern Pretoria - South Africa

BESTER, Craig James Computer Science
DISSERTATION: Multi-Pass Deep Q-Networks for Reinforcement Learning with Parameterised Action Spaces

BEUKES, Dylan Edmund Animal, Plant and Environmental Sciences
DISSERTATION: Consequences of grazing resistance adaptations on Rhodohypoxis baurii var. platypetala population genetics

BHAT, Ishwari Ravindra Geographical Information Systems and Remote Sensing
RESEARCH REPORT: A Multilevel model of self-rated health in Gauteng: a comorbidity study

BOGATSU, Mpho Annah Amanda Geographical Information Systems and Remote Sensing
RESEARCH REPORT: The evaluation of field-based analysis in conjunction with Sentinel-2 imagery for the identification and mapping of minerals in the Vredefort Dome

BROMFIELD, Meagan (with Distinction) Geographical Information Systems and Remote Sensing
RESEARCH REPORT: Power-line related mortalities of the Cape Vulture (Gyps coprotheres) within the Eastern Cape, South Africa: modelling terrain characteristics in hotspot areas using GIS

BURRENNS, Amy Animal, Plant and Environmental Sciences
DISSERTATION: An investigation of the international traditional medicine trade as an introduction pathway for alien plants into South Africa

BUTHELEZI, Nomcebo Sphesihle Geographical Information Systems and Remote Sensing
RESEARCH REPORT: Delineating current and potential distributions of prosopis glandulosa in the SKA SA Karoo Site

BUTHELEZI, Thuli Innocentia Chemistry
DISSERTATION: Carbon with different functionalities as a hydrogen transport layer in ruthenium promoted Fischer-Tropsch catalysts

CARNIE, Robyn Elizabeth Chemistry
DISSERTATION: The design and synthesis of novel EGFR inhibitors
CHIDZUNGU, Thandiwe Geography, Archaeology and Environmental Studies DISSERTATION: Perspectives on the role of social impact assessments in solving acid mine drainage imposed socio-economic impacts in post-mining communities: a study of Carolina Catchment area X11B in Mpumalanga, South Africa

DALZIEL, Alexandra-Belle Mendes (with Distinction) Geography, Archaeology and Environmental Studies DISSERTATION: Application of the DPSIR framework in the assessment of marine protected areas in South Africa: a study of KwaZulu-Natal and Eastern Cape Provinces

DAYA, Priyal Geology DISSERTATION: The petrology and petrogenesis of lamprophyric dykes in the Bushveld Complex, and their possible role in causing gas outbursts

DIAS, Brandon Geophysics DISSERTATION: Applications of chaos and fractals to geophysical inversion problems

DLAMINI, Thialefo Geography, Archaeology and Environmental Studies DISSERTATION: Infrastructure of citizenship and subj ecthood. Traditional authorities vs national government: a case study of Tlokweng village, North West, South Africa

DONGA, Buhlebenkosi Joylene (with Distinction) Geology DISSERTATION: Structural interpretation using seismic attributes: a case study from the offshore Orange Basin, South Africa

DU PLESSIS, Devon Murphy Geography, Archaeology and Environmental Studies DISSERTATION: The spatial distribution of trace metal contaminants, associated with gold mining, in lakes, dams, and pans across Benoni, Ekurhueni

FREEBOROUGH, Warren Molecular and Cell Biology DISSERTATION: The transcription factor interacting network of tolerant TME3 and susceptible T200 cassava landraces infected with SACMV

GANDOTE, Sonagnon Eunice Edwige Physics DISSERTATION: Resurgence in the 1/2 BPS Sector

GARDINER, Courtney Elizabeth Campbell Animal, Plant and Environmental Sciences DISSERTATION: Colours of confetti: the role of ABP genes and environmental variables in flower colour polymorphisms of Rhodohypoxis baurii var. confecta

GOODBRAND, Sarah Amy Animal, Plant and Environmental Sciences DISSERTATION: Ecosystem-based adaptation of urban hydrology to climate change in three South African cities

GOSLIN, Lechelle Morgan (with Distinction) Geology DISSERTATION: Deformation and partial melting in the Central Zone of the Damara Orogen, Namibia

GUMBO, Mukudzeyi Manduku Computational and Applied Mathematics DISSERTATION: Lie symmetry analysis of the two-factor Black-Scholes equation

JAMES, Catherine Joanne Molecular and Cell Biology DISSERTATION: Optimisation of a multi-subtype multiplex PCR to screen for key drug resistance mutations in HIV

JERAM, Dyan Animal, Plant and Environmental Sciences DISSERTATION: Thirsty for change: water challenges and opportunities in South African businesses
JOHNSON, Ryan Stuart
Geography, Archaeology and Environmental Studies
DISSERTATION: Seasonal variability of BTEX concentrations at Lanseria International Airport, South Africa

JOZELA, Mudalo Isabel
Chemistry
DISSERTATION: Development and quantification of multi-component volatile organic compound reference gas mixtures

KALENZI, Lillian Kewesa
Mathematical Statistics
RESEARCH REPORT: Optimisation of call center operations

KAPUKA, Ester Panduleni
Economic Geology
RESEARCH REPORT: Distribution of Rare Earth Elements in the Epembe carbonatite dyke, Opuwo area, Namibia

KEKANA, Thabiso Richard
Geographical Information Systems and Remote Sensing
RESEARCH REPORT: Mapping the spatiotemporal distribution of the exotic Tamarix species in the riparian ecosystem using multi-temporal remote sensing data

KUNNEKE, Luke Karl
Economic Geology
RESEARCH REPORT: A chemical, mineralogical and petrographic study of the Koppies bentonite deposits within the Volksrust Formation, South Africa

LAWRENCE, Sean (with Distinction)
Science Education
RESEARCH REPORT: A longitudinal study of Life Sciences students' unscientific ideas about evolution

LOURENCO, Mauro Cesar
Geography, Archaeology and Environmental Studies
DISSERTATION: The influence of a chemical treatment plant and an existing wetland ecosystem on AMD pollution and water quality along the Blesbokspruit, South Africa

LU, Tianqi
Chemistry
DISSERTATION: The synthesis of enantiopure 1,3-dimethylisochroman and related racemic analogues using anacardic acid as a bio-renewable starting material

MALATJI, Reneilwe Anita
Geographical Information Systems and Remote Sensing
RESEARCH REPORT: Towards a GIS platform for monitoring the water quality of the Jukskei River catchment: defining a sampling network

MANAKA, Thokozile Valentine
Physics
DISSERTATION: Analysis of type 1 diabetes verbal autopsy data by machine learning techniques

MANSOOR, Yusuf (with Distinction)
Geography, Archaeology and Environmental Studies
DISSERTATION: Assessment of BTEX concentrations on-board in-service public buses in Johannesburg, South Africa

MARAIS, Timothy
Economic Geology
RESEARCH REPORT: The Uis pegmatites: morphology, mineralisation and distribution, with an emphasis on the V1 and V2 intrusions

MASWOBA, Sinah (with Distinction)
Animal, Plant and Environmental Sciences
DISSERTATION: Behavioural responses of male woodland dormice (Graphiurus murinus) towards communicatory cues of same-sex conspecifics

MATEMBO, Joseph (with Distinction)
Archaeology
DISSERTATION: The Middle and Later Stone Age crystal quartz technologies of Pomongwe Cave, Matopos (Zimbabwe)

MBONANI, Sipho Ebenezer
Animal, Plant and Environmental Sciences
DISSERTATION: A morphometric and population genetic investigation of Opuntia engelmannii Salm-Dyck (Cactaceae: Opuntioidae) lineage variation in Africa
MCGOWAN, Lauren  
Animal, Plant and Environmental Sciences  
**DISSERTATION:** Avian frugivory of *Cinnamomum camphora* in an urban environment: visiting bird species and the implications for seed dispersal and seedling emergence

MGANGA, Kelebohile  
Geographical Information Systems and Remote Sensing  
**RESEARCH REPORT:** Comparison of Sentinel-2 and Landsat 8 for crop discrimination in the Free State mine Goldfields

MGULI, Sabelo Humphrey  
Geographical Information Systems and Remote Sensing  
**RESEARCH REPORT:** Spatial patterns and determinants of residential burglary in Gauteng for 2011/2012

MGUI, Lindelo Mthabisi *(with Distinction)*  
Molecular and Cell Biology  
**DISSERTATION:** Lipase-catalysed hydrolysis of Morita-Baylis-Hillman adducts

MHLANGA, Mandisa Tendayi  
Mathematical Statistics  
**RESEARCH REPORT:** Model Development for the Optimization of a Bus Transit Network using Heuristics

MKENTANE, Andile Protas  
Geology  
**DISSERTATION:** The geodynamic evolution of the Ferké shear zone (FSZ): relative timing of the associated tectonic and magmatic events, north-central Ivory Coast, West Africa

MOLELEKI, Nkimo Stephen  
Geophysics  
**DISSERTATION:** Geophysical methods for tunnel detection and characterization of a coal mine in Ermelo

MOSHOESHOE, Seeiso Alexander  
Geophysics  
**DISSERTATION:** Use of the seismic reflection method to optimize safety and extraction: a case study from a South African platinum mine

MOSHUPYA, Paballo Marry  
Hydrogeology  
**RESEARCH REPORT:** The uranium and radon gas concentrations and impact on human health: a case from abandoned gold mine tailings in the West Rand area, Krugersdorp, South Africa

MPHAGO, Puledi Glennis *(with Distinction)*  
Chemistry  
**DISSERTATION:** Synthesis of nitrogen-doped carbon dots/polymer composites for their application in organic-based solar cells

MUGWANGWAVARI, Beaullah *(with Distinction)*  
Mathematics  
**DISSERTATION:** Partition functions related to identities of Euler type

MURISA, Tatenda Kenneth  
Mathematical Statistics  
**RESEARCH REPORT:** Evaluation of cluster analysis and latent class analysis in clustering

NAIDOO, Arantxa  
Geology  
**DISSERTATION:** Petrogenesis of the Late Archean Singertat Alkaline Igneous Complex, North Atlantic Craton, South-East Greenland

NGQINAYO, Ntombizanele  
Chemistry  
**DISSERTATION:** The design and synthesis of anti-tuberculosis peptidomimetics focusing on lassomycin derivatives

NICOLAE, Aurel-loan *(with Distinction)*  
Computational and Applied Mathematics  
**RESEARCH REPORT:** A comparative analysis of classic geometrical methods and sparse regression methods for linearly unmixing hyperspectral image data

NYIRAHAGENIMANA, Solange  
Environmental Sciences  
**RESEARCH REPORT:** Mapping *Eucalyptus* species using high-resolution multispectral imagery
OZTURK, Anil

Dissertation: Fluid-rock interaction in carbonatite and alkaline composite intrusions and implications for rare earth element mineralization

PATIL, Lavesh Vijay

Research Report: An empirical comparison of decision trees and decision graphs on supervised learning problems

PILLAY, Micheal Teron (with Distinction)

Dissertation: A Southern Hemispheric tropical cyclone climatology: analysis of variability under a changing climate

PILLAY, Talia (with Distinction)

Dissertation: Comparative genomic analyses of the additional flagellar loci in Enterobacteriaceae

QEGU, Leolin Ntsika

Research Report: Mapping and modelling spatial distribution Prosopis Juliflora invasion in the Northern Cape Province of South Africa

RAMA, Haripriya

Dissertation: Tracing heavy metals in tomato plants watered with synthetic wastewater treated with a bacterial coated calcium alginate nanobiosorbent

RAMAOKA, Tumelo

Research Report: Solving multiplication and division word problems - strategies used by grade 6 learners

RAMASIMONG, Liakae Emely

Research Report: The effects of drought and stocking density on vegetation productivity and the resilience of rangelands in Lesotho

RANGATA, Mapitsi Roseline

Dissertation: Exploring the applicability of functional data analysis (FDA) for dimension reduction in bigdata applications

RANSOM, Caitlin Ruth

Dissertation: Contrasting elephants and humans as agents of disturbance in Miombo woodlands

SEHOOLE, Lebogang Tshepiso Charmaine

Dissertation: Application of 3D seismic to enhance mapping of potholes in the western Bushveld Complex, South Africa

SELOO, Jabulani Justice

Research Report: Geochemical controls and characteristics of natural seepage of carbon dioxide along the Bongwana Fault, KwaZulu-Natal and Eastern Cape Provinces

SEPENG, Motshwaedi Collen

Dissertation: Examining the dynamics shaping water access for rural and peri-urban areas in the region of Moretele, North West Province, South Africa

SHURO, Pious

Dissertation: The design and synthesis of Mycobacterium tuberculosis caseinolytic protease Inhibitors

SINGH, Meriska

Dissertation: Attempting palaeoenvironmental reconstructions in war-torn zones: the case of the Okavango source wetlands in Angola

SMITH, Calvin Brandon

Dissertation: Stratigraphy of the Lower Carboniferous to Middle Permian Vúzi, Moatize and Matinde formations of the Sanângoè-Mefidézi sub-basin, Tete Province Mozambique
TEBEILA, Mashienyane Geniver  
**Environmental Sciences**

**RESEARCH REPORT:** Public participation in environmental decision making: community opposition to the Lombardy East social housing project

TRAORE, Daouda  
**Geology**

**DISSERTATION:** Understanding the Sadiola Hill oxide zone (Mali), its geochemical complexities and alternation signatures

TSHIUNZA, Rachel Nsubila  
**Geography, Archaeology and Environmental Studies**

**DISSERTATION:** Environmental compliance and sustainability in South Africa: a study of the transport industry in Johannesburg

VAN NIEKERK, Benjamin Lipman  
**Computational and Applied Mathematics**

**DISSERTATION:** Learning safe predictive control with Gaussian processes

VAN ROOYEN, Amoret  
**Archaeology**

**DISSERTATION:** A comparative archaeological study of two colonial-period farm middens in the Sneeuuberg, Eastern Cape

VENKATARAMAN, Karthikeyan (with Distinction)  
**Computer Science**

**RESEARCH REPORT:** Application of computer vision and machine learning for classification of *Mycobacterium Tuberculosis* (TB) cultures to assist disease diagnostics

VIGUS-BROWN, Martyn Sonny  
**Geography, Archaeology and Environmental Studies**

**DISSERTATION:** The state of housing in Ekurhuleni: urban infilling vs megaprojects in the Leeuwoort development, Boksburg

### Bachelor of Science Honours

BALEPILE, Olotleng Setse  
**Mathematical Sciences**

BUTHELEZI, Langelihle Thandolwethu  
**Geography**

LEPOTA, Thabo James  
**Geophysics**

MABASO, Tlhogelo Joseph  
**Geophysics**

MAKGATO, Oniccah Selaelo  
**Chemistry**

MALAHLELA, Raesetja Michael  
**Mathematical Sciences**

MAREVHULA, Nyawasedza  
**Big Data Analytics**

MUDAVANHU, Francis Tinashe  
**Big Data Analytics**

MUNYAI, Hulisani  
**Mathematical Statistics**

MUTSHAFA, Ndamulelo  
**Geophysics**

NKADIMENG, Edward Khomotso  
**Physics**

SIBANDA, Fortunate  
**Animal Plant and Environmental Sciences**

ZONDI, Slindokuhle Kwanele Fullpeace  
**Geography**
Bachelor of Science

KUBAYI, Jollet Truth

MASONDO, Xoliswa Zinzile

MAVUNDA, Hactor Mahlori

MCGEER, Liza

MOKONO, Khutšo Selokela

MOSHOEU, Paulina

MPHELA, Nthabiseng Khutela Precious

MTHEMBU, Meckson Tibande

MTHEMBU, Zandile

NAIDOO, Kiashlin

RAHIMTULLA, Irshaad Ebrahim

REDDY, Darushin

THUMRE, Ntokozo