
FACULTY OF COMMERCE
THE GRADUATE SCHOOL OF BUSINESS

ALL FACULTIES
DOCTOR OF PHILOSOPHY

ORDER OF PROCEEDINGS

Academic Procession.

(The congregation is requested to stand as the procession enters the hall)

The Presiding Officer will constitute the congregation.

The National Anthem.

The University Dedication will be read by a member of the SRC.

Musical Item.

Welcome by the Master of Ceremonies.

The Orator will present Denis Goldberg for the award of an honorary degree.

The Master of Ceremonies will invite Denis Goldberg to address the Congregation.

Address by Denis Goldberg

The graduands and diplomates will be presented to the Presiding Officer by the Acting Director of the Graduate School of Business and Deans of the Faculties.

The Presiding Officer will congratulate the new graduates and diplomates.

The Master of Ceremonies will make closing announcements and invite the congregation to stand.

The Presiding Officer will dissolve the congregation.

The procession, including the new graduates and diplomates, will leave the hall.
(The congregation is requested to remain standing until the procession has left the hall.)

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 COMMERCE

Master's degrees may be awarded with distinction

for the dissertation, (in a coursework and dissertation curriculum) for especially meritorious work, the dissertation being in the first class (at least 75%) and at least 70% for the coursework depending on the degree.

in the degree, for especially meritorious work, where the average is at least 75% and no component is below 70%.

HONORARY DEGREE

**Denis Theodore Goldberg
for the DScEng (honoris causa)**

Denis Goldberg was born in Cape Town in 1933, schooled in Observatory and studied civil engineering at the University of Cape Town. He graduated in 1955 with a BSc Civil Engineering.

Goldberg was an anti-apartheid activist who served in the Modern Youth Society, the Congress of Democrats as treasurer or chairperson at various times and was active in organising for the Congress of the People. His political activism led to his dismissal from the South African Railways. In 1960 he was detained for four months and declared a banned person. In 1963 he joined Mkhonto WeSizwe as a technical officer and worked on the plan for Operation Mayibuye. In 1963 he was arrested at Liliesleaf Farm, and following the Rivonia Trial, sentenced to four terms of life imprisonment in 1964. As the only white person convicted, he was isolated from his comrades and imprisoned in Pretoria. During his imprisonment he obtained a BAdmin 1969, a BA 1975, and a BBibl 1981. He was finally released from prison in 1985.

After his release, Goldberg served in the London Mission of the ANC as spokesperson until 1994. He returned to South Africa in 2002 and served two Ministers of Water Affairs as a special advisor.

Despite the multiple influential positions Goldberg held in the state and party, he has always retained the space where he has been able to be deeply critical of those transgressing what he saw as the core values of the ANC. He has been a fierce critic of 'state capture' by external forces, as well as the degrading of moral stature of the party he joined as a young man, and for which he was prepared to die. Throughout his life, he has been fearless in speaking truth to power.

He has also made substantial contributions to civil society, most notably serving as 1994 to June 2002 Director of Community H.E.A.R.T. London between 1994 and 2002, and now as Honorary President, and establishing the Denis Goldberg Legacy Foundation Trust in 2016. The core project of the Trust is the establishment of the House of Hope Art and Culture Education Centre in Hout Bay as a place where children from the different communities of the area can come together to dream, to grow, to learn and to enrich their lives.

Denis Goldberg is a UCT alumnus who represents the very best of UCT's values and culture. His courage and selflessness over decades saw him become a central figure in the liberation of our country from apartheid, and a moral beacon for the new South Africa.

**NAMES OF
GRADUANDS/DIPLOMATES**

An asterisk * denotes that the degree or diploma will be awarded in the absence of the candidate.

A dagger † denotes that the degree or diploma will be awarded posthumously.

1. FACULTY OF COMMERCE

Dean:

Associate Professor L Ronnie

*Director of the Graduate School
of Business (Acting):*

Associate Professor K Sewchurran

ASSOCIATE IN MANAGEMENT

*Lineekela Kalimba

**POSTGRADUATE DIPLOMA IN
MANAGEMENT PRACTICE**

Andrew Agwaro Adede
Clement Kwasi Asiamah
Christine Nakiberu Balukusa
Simone Agnes Beukes
Maria Luisa Manuel Cange
Richard James Carstens
*Ntoshang Magdeline Glory Chabedi
Pavo-Leigh Mark de Freitas
Miriam Dube (with distinction)
Paul Dube (with distinction)
*Maritsa Esterhuysen
Jane Margaret Fraser (with distinction)
Thandeka Fiona Gwala
Dustin James Henry
Fatima Melissa Henwood
Felicit Helga Hikuam (with
distinction)
Jennifer Janisch
Belinda Sigrid Jones
Kauta Kaakunga
Lumba Kamanga
*Sara Regina Maria Keller
Bongiwe Deborah Klaas
Gerald Nana Akwasi Agyeman Kusi
Christo Lodder
Elaine Ellen Maane
Snethemba Tramaine Maduna
Loreena Maharaj

Rakhee Kamrajh Maharaj (with
distinction)

*Getrude Maiba Mwale
Nombulelo Makwane
Gcobisa Happiness Maqanda
Gogo Muanza Matadi
*Zukisa Matakua
*Dylan William Mcclusky
Anathi Jeanet Mguba
Nontuthuko Mkize
Sakhile Ernest Mngoma
Themobile Colette Mnisi
Boitumelo Odirile Mogajane
Kgomotso Motlogeloa
Yondela Khanya Mqedlana
*Farai Evans Mudoza
Themhani Unakho Mzekeli
Refilwe Gail Ncube
Janet Munsaka Ndebele
Vera Sinazo Ngalo
Kubashni Patrick
Marc Anthony Petersen
Thembakazi Rala
*Mandy Leigh Rapson (with distinction)
Ayanda Rawutini
Manene Rigala
Lavona Roman
Ielhaam Saban
Mogamat Zaid Salie (with distinction)
David Patricio Sepulveda
Avedius Mfuruki Severine
Janny Siapata Ireng
Pamela Sihawu
Tracy Smith
Kiara Stanford
Ainsley Matthew Stewart
Ivy Sheneez Strydom
Quinten Stephan Taljaard (with
distinction)
Franco Tallie
John Mark Thompson
*Graeme Richard Tilly
Lindokuhle Timane
Bronwin Titus
Lethabo Mamaphile Tloubatla
Siyanda Tshoko
Ryno Gerhard Uys (with distinction)
Tasneem Vallie
Devin van Rooyen
Morne Donny Venter
Werner Venter
Kazlin Warner
Almari Wessels (with distinction)
Althea Wicomb
Adnaan Wise
Nandile Siyasanga Yani
Sanelisiwe Zuke (with distinction)

**DEGREE OF BACHELOR
OF COMMERCE HONOURS**

*In Financial Analysis &
Portfolio Management:*
*Cayla-Rose Zukiswa Jack

**DEGREE OF MASTER OF
BUSINESS ADMINISTRATION**

*Asad Khalid Abdi
Ansellia Ariel Adams (with distinction)
Randa Alake Adechoubou
Jahangir Allie
Aly Faruque Aly
Stephanie Elaine Appel (with
distinction)
*Rowen Ash
Armando Ayala Robles
Gareth Peter Brauteseth
Ruan Breytenbach
*Aaron Brose
Candice Melissa Carels (with
distinction)
Pierre Hadrien Jacques Cassuto (with
distinction)
*Lupupa Chapewa
*Alforde Charumbira
Keletjo Thabitha Chiloane
*Gerald Noel Tozivepi Chimanya
Byron Granville Christie
Paul Alexander Coetzer (with
distinction)
*Tom Robin Junior Courly
Matthew Joseph Cruise
*Afzal Dalwai
Daniel Ricardo Moutinho da Silva
Kevin de Jong (with distinction)
Maureen Dennehy (with distinction)
Shelley de Reuck
Eustace Steyn de Vos
*Chipo Fadzai Diassakoula
*John Andrew Duncan
*Abdallah Yasin Dutton (with
distinction)
*Hendrik Oostenwald Eksteen
Philip Talbot Elliott
*Diana Cordovil Espada
Anthony James Foord (with distinction)
Yang Gao
James-Thomas William Geldart
Margaux Giannaros
Bonita Greeff (with distinction)
Hendrik Jacobus Haasbroek
Zara Hammerschlag (with distinction)
Mayra Hartmann

Frances Sarah Heathcote (with distinction)
 *Paul David Henkel
 Jonathan Paul Hill (with distinction)
 Wayne Idas (with distinction)
 Tehmeena Itzkin
 Sarah-Jane Elizabeth Joshua
 Andrew Zibusiso Jubane
 Louis Kato Kiggundu
 Rilwele Kutama
 *Calvin John Lane
 *Wenting Liu
 Johannes Jacobus Lochner
 Takudzwa Magada
 Khotso Mahlasela
 *Charl Jacobus Francois Marais
 Thomas James Masheder
 Larysa Masliukova
 *Sayed Abu Bakr Mohamed
 Lynne Marie Molloy (with distinction)
 Seshen Moodley
 Desigan Moonsamy
 *Ahmed Moosa (with distinction)
 Alexander St Leger Moss
 Martin Maanda Mphaphuli (with distinction)
 Maijang Samuel Mpherwane
 Simbarashe Shingirai Mswaka
 Tintswalo Given Mthombeni
 Regis Mukumbuzi
 Saa-ima Natha
 Andre John Nel
 Jeanné Odendaal (with distinction)
 *Ayomide Oladapo
 Kavisha Meena Parbhoo
 Niccolo Passerin Dentreves
 Dawid Jacobus Pelsler (with distinction)
 Katherine Samantha Probert
 Juliet Elizabeth Prowse
 Estea Hester Helena Rademeyer
 (with distinction)
 Selaelo Katlego Ramusi
 Rezah Reid
 *Dana Meredith Rissley (with distinction)
 *Anodha Sadayen
 Uthman Samodien (with distinction)
 *Enrico Emanuele Sessarego
 Cosmos Dylan Shaduka
 Nidheesh Sharma (with distinction)
 *Hamdi Anwar Sheriff
 Namuziya Monica Sikatali
 Barbara-Jeanne Slazus (with distinction)
 Johannes Paulus Spangenberg (with distinction)
 Sander Johannes Louis Staps
 Harikrishna Sudhakaran
 Johan Harold Terblanche

Andrew IV Theunissen (with distinction)
 George Thomas
 Sharon Joy Thomas
 Timothy Nicholas Thornton
 Ryan Michael van den Bergh
 Caroline van der Merwe
 Matthys Michielse van der Merwe
 Joel Benjamin van der Schyff
 Russell Stephen Varty
 Robin Stuart Vember
 Anlie Vermeulen
 Jacques Ulrich Vogeli (with distinction)
 Moritz Karl Erich von Hesberg (with distinction)
 Jacobus Stephanus Wiid (with distinction)
 Lauren Olivia Williams
 *Serron Wilson
 Brennan Kevin Wright
 Zebias Tanatswa Zingoni

In Executive Management:

Simon Garwood Alston (with distinction)
 Paxton Duvanel Anderson (with distinction)
 Jacky Vangu Bongo (with distinction)
 Parmasivan Chetty
 Karen Lynette de Klerk
 Natalia Ndilimeke Haulofu
 *Michael Held
 Hellmuth Hermann Johl (with distinction)
 Andre Nolan Johnson
 *Ali Zafar Khan
 Maxwell Sabelo Kubheka
 Yolandie le Grange
 Lesetja Thomas Lekgotho
 Ignatius Butiki Loliwe
 Nkululeko Madonko (with distinction)
 *Francesco Massimo Mariola
 Dorcas Tshepiso Moahloli
 Niyaz Ahmed Mowzer
 Chance Mugala
 Natasja Muller (with distinction)
 Wendall Gerard Naidoo (with distinction)
 *Thabo Abel Nkitseng
 *Graham Marc North (with distinction)
 Deeren Pillay
 Arvin Ramjee
 Linda Rulashe
 *Delva Rose Shamley (with distinction)
 Mark John Smith (with distinction)
 Claver Bernard Sserumaga
 *Claire Marie Jeanne Thai
 Adolph Benjamin Tomes

Daniel Rudolph van den Heever (with distinction)

DEGREE OF MASTER OF
 COMMERCE IN
 DEVELOPMENT FINANCE

*Hashim Abdirahman Abdinur (with distinction in the coursework component)
 Aliyu Adamu
 John Nimrod Bakilana (with distinction in the dissertation)
 Erin Elizabeth Bennett (with distinction in the dissertation and the degree with distinction)
 Joy Busolo (with distinction in the dissertation)
 Blessmore Chanakira
 Richard Chikaya
 Ephraim Chinyamunzore (with distinction in the dissertation)
 Blaise Jordan Dobson (with distinction in the dissertation)
 Sithembinkosi Dube
 *Francis Valentine Garikayi (with distinction in the dissertation)
 Rauna Ndesihafela Hakwaashika
 Nomfundiso Priscilla Jezi
 *Anna Kahombe Kavindja (with distinction in the dissertation)
 *Kwena Komape (with distinction in the dissertation)
 Lehlohonolo Letho (with distinction in the coursework component)
 Edwin Mandlakayise Limba
 *Felix Benson Lombe (with distinction in the dissertation)
 Malasa Lumbala (with distinction in the dissertation)
 Constance Monteiro Macalagh
 Eric Gwandega Magale
 Simbarashe Stanley Magombedze
 Lifa Lhilhi Majali (with distinction in the dissertation)
 Terence Crayl Malamulo (with distinction in the dissertation)
 Bridget Sikopo Matakala
 *Isaac Sakkie Matshego
 Sharon Mbano
 Prudence Kuhle Mnisi (with distinction in the dissertation)
 Matome Titus Modiba
 Mapule Beauty Mofokeng
 Aliyu Mustapha Mohammed (with distinction in the dissertation)

Kgotso Kenneth Mopeli (with distinction in the dissertation)
 Neko Thabiso Henry Moshoeshoe
 Kutlwano Motlhabane
 Tawanda Mudamburi (with distinction in the dissertation)
 Mildreat Muroyiwa (with distinction in the dissertation)
 *Tigere Muzenda
 Jeremy Ronald Naidoo
 Lwazi Derkson Ncoliwu
 *Trinity Makava Ncube
 Nkhangweleni Nehemia Ramashia
 Hilaria Ndilokelwa Sakaria
 Molobeng Serame
 Ndesihafela Melao Shipila
 Mwaya Celline Siwale (with distinction in the dissertation)
 George Sermador Sogonon
 Imraan Solwa (with distinction in the coursework component)
 Baranee Tongboonrawd
 Elise Peneyambeko Uusiku
 Kalwani Zyambo (with distinction in the dissertation)

DEGREE OF MASTER
 OF PHILOSOPHY

In Inclusive Innovation:

Geraldine Mary Hand (with distinction)

DEGREE OF DOCTOR
 OF PHILOSOPHY

In Business Administration:

Kannyiri Thadious Banyen
 Thesis Title: *Financial integration, bank performance and economic growth in Africa*

Kannyiri Banyen holds BSc and MPhil degrees in Finance from the University of Ghana. Before joining UCT in 2016 for his doctoral studies, he worked as a lecturer of Finance at the University for Development Studies in Ghana.

Kannyiri Banyen's thesis focuses on the effect of financial integration on bank performance and economic growth in Africa. He further investigates the differences in these relationships across five regional economic communities of Africa. He uses data from 405 banks across 47 African countries over the period

2007-2014. He starts by examining the relationship between financial integration and a composite measure of bank profitability, finding that financial integration promotes bank profitability in Africa. He further investigates the effect of financial integration and competition on bank risk-taking behaviour, finding that deficiency in competition promotes bank risk-taking in Africa. He extends his research to investigate the causal relationship between bank competition and efficiency as well as financial integration, bank lending and economic growth, finding major variations in these relationships across Africa's sub-regional markets. These findings will promote peer-learning and the tailoring of policy interventions in fostering financial integration and growth in Africa.

Supervisor: Professor N Biekpe (Graduate School of Business: Development Finance and Econometrics)

Babar Dharani

Thesis Title: *Organizational life cycle and happiness at work: investigating best-fit for employees based on their locus of control expectancy*

Babar Dharani completed his BA(Hons) qualification at the University of Liverpool in 2001, became an associate of the Institute of Chartered Accountants in England and Wales (ICAEW) in 2004, completed his MBA at UCT's Graduate School of Business in 2008, and became a fellow of the ICAEW in 2015. He worked in the Diamond industry as Chief Finance Officer, and began full-time doctoral work in 2017.

Babar Dharani's thesis deductively concludes the resilience of individuals with a balanced locus of control expectancy that allows them to be happiest at work, largely independent of the working environment, assessed using position on the business life cycle of the department in a firm. The thesis also reports inductive findings regarding differences in perspectives of employees with an internal or external locus of control expectancy for their preference towards departments earlier in the stages

in the organisational life cycle. These findings are useful in investigating best-fit for employees based on their personality to the environment that can allow for happiness at work.

Supervisor: Professor K April (Graduate School of Business)

Rufaro Mucheka

Thesis Title: *An exploration of strategies used by South African companies to expand into other African markets*

Rufaro Mucheka holds a BSc and an MBA. Since 2016, as the Nedbank ambassador in the business expansion & adaptation into West Africa, she has pioneered that Ecobank set up a Wealth Management business across key markets Nigeria, Ghana, Cote d'Ivoire & Senegal.

Rufaro Mucheka's thesis focuses on the influences of psychic distance, firm resources and strategic choice on internationalisation strategies of South African companies as they expand their operations into other African countries. She starts with a survey of 48 executives working in 23 companies which was used to identify two cases in the financial services sector – bank and insurance. In her findings, the bank which internationalised into other British colonies since the 18th century uses the ownership model, whilst the insurance company, despite only venturing into internationalisation in the past 2 decades (latecomer), it has expanded into more countries with high psychic distant markets using the partnership. What is apparent through academia and experiential learning is that the key to effectively implement and gain local legitimacy, South African multinationals need to understand and respect local culture and hire local management or diaspora citizens of host countries to manage the local business.

Supervisor: A/Professor R Chivaka (Graduate School of Business)

Energy Mutodi

Thesis Title: *The impact of the multiple currency system on the performance of the stock market in Zimbabwe*

Energy Mutodi holds a Master's in Business Administration from the University of Zimbabwe. He joined UCT's Graduate School of Business in 2016 for his PhD studies and is currently the Deputy Minister of Information, Publicity and Broadcasting Services in the Zimbabwe government.

Energy Mutodi's thesis investigates the impact of the multiple currency system on the performance of the stock market in Zimbabwe in order to establish the macroeconomic drivers to stock market performance, the external factors that influence stock returns and the pull and push factors that influence foreign investor participation under a multiple currency system. His study developed and estimated five econometric models on data obtained from 54 companies listed on the Zimbabwe Stock Exchange, concluding that money supply is the major determinant factor to stock market performance under a multiple currency system. His study therefore recommends that monetary authorities in dollarized economies should implement policies that promote liquidity in the economy and should remove restrictions that limit foreign investor participation.

Supervisor: Dr K Ramaboa (Graduate School of Business)

In Demography:

Peter Kisaakye

Thesis Title: *Contraceptive histories: a comparative analysis of switching behaviour in five East African countries*

Peter Kisaakye obtained a BSc in Population Studies from Makerere University (Uganda) and an MPhil in Population Studies from the Regional Institute for Population Studies (RIPS) at the University of Ghana before commencing his doctoral studies at UCT in 2014.

Peter Kisaakye's thesis focuses on patterns of contraceptive adoption, switching, and discontinuation in

five East African countries. He uses retrospective contraceptive use calendar data from recent Demographic and Health Surveys conducted in Uganda, Rwanda, Tanzania, Kenya, and Ethiopia to better understand the factors that determine the method of contraception adopted, and which methods lead to consistent contraceptive use among women in these countries. After investigating the quality of these data and finding them to be of generally high quality, he applies a variety of statistical approaches to illuminate patterns of contraceptive use and the mix of methods adopted, taking into account socio-economic factors. He attributes the relatively slow pace of fertility decline in these countries to the limited extent to which women immediately switch from one method to another. His conclusions offer new insights that should assist in the formulation and implementation of reproductive health policies in East Africa.

Supervisor: Professor T Moultrie (Management Studies)

In Economics:

Ryan David Hawthorne

Thesis Title: *The impact of heterogeneous consumer preferences on welfare outcomes of government interventions*

Ryan Hawthorne holds a BBusSc from UCT and an MCom from the University of the Witwatersrand. His PhD thesis emerged from his interest in the economics of telecommunications markets, which he developed during his professional career.

Ryan Hawthorne's thesis considers competition in the telecommunications sector in South Africa. First, he uses hedonic price regressions to study changes in telecommunications prices between 2009 and 2017. He finds that the regulation of termination rates, which declined by 90%, contributed to a significant reduction in prices. This emphasises the role of regulation. Secondly, he develops a model of competition using a survey of about 134,000 individuals between 2009 and

2014. The model is used to assess the distributional effects of regulation and entry. He finds that regulation benefits consumers significantly more than entry but both result in a greater increase in mobile penetration among poor consumers. Thirdly, he uses the same survey to study substitution between fixed and mobile broadband. He shows that they are complements for higher-income consumers where individuals own a computer or have internet at work or school, suggesting that interventions beyond mobile services may be needed.

Supervisor: Professor L Grzybowski (Economics)

Co-supervisor: Professor L Edwards (Economics)

Ratjomose Petrose Machema

Thesis Title: *Income stratification and polarization in post-apartheid South Africa*

Ratjomose Machema holds a BA in Economics and Statistics from the National University of Lesotho and an MPhil in Economics from the University of Ghana. He enrolled in the AERC collaborative PhD programme in Economics at UCT in 2012.

Ratjomose Machema's thesis investigates three aspects of inequality in post-Apartheid South Africa. Using data collected by surveys between 1993 and 2014-2015, first he shows that there is decline in the clustering of household income around specific ranges of income. This decline is partly due to the increase in government transfers in the post-Apartheid era. Secondly, he shows that the overlapping of the income distributions of racial groups has increased, which means the incomes of these population groups have converged. The growth in convergence of incomes is also attributed to the increase in government transfers. Therefore, by increasing the level and reach of government transfers, policy-makers can simultaneously reduce the clustering of incomes and increase economic integration. Lastly, he shows that, as social distances between racial groups are being reduced, the social distances within race groups have increased.

Supervisor: Professor M Leibbrandt (Economics, UCT)
Co-supervisor: Professor I Woolard (Economics, Stellenbosch)

Eliud Dismas Moyi

Thesis Title: *Loan growth and risk: evidence from microfinance institutions in Africa*

Eliud Moyi holds a BA and MA in Economics from the University of Nairobi, Kenya. Before joining UCT in 2014 for his PhD studies, he worked as a Policy Analyst at the Kenya Institute for Public Policy Research and Analysis.

Eliud Moyi's thesis focuses on the microfinance industry in Sub-Saharan Africa and estimates the determinants of growth in loans and credit risk. He further investigates the role of mobile financial services on the demand for microcredit in Kenya. He uses five sets of data that were assembled from Microfinance Information Exchange, World Development Indicators, World Governance Indicators, Doing Business Indicators and FinAccess survey. He starts by investigating the factors that explain the fast growth of loans as well as credit risk in microfinance institutions. His findings suggest that micro-level, macroeconomic and institutional factors are important. He extends his research to examine the influence of mobile financial services on access to microcredit. He finds that the probability of using microcredit is lower among those using mobile banking and mobile credit. He attributes this to the fact that consumers of microcredit are migrating from microfinance products towards mobile based financial services.

Supervisor: Professor E Nikolaidou (Economics)

Mark Patrick Schneider

Thesis Title: *Studies in risk perception and financial literacy: applications using subjective belief elicitation*

Mark Schneider holds a BSc in Finance and BSc and MA degrees in Economics from the University of Central Florida, as well as an AS degree in Culinary

Management from Valencia College in Orlando, Florida. He began his doctoral studies at UCT in 2013.

Mark Schneider's thesis develops and applies new methods for measuring financial literacy. Rather than multiple-choice or "fill-in-the-blank" survey instruments that measure literacy very noisily and with ineliminable response bias, he utilises state-of-the-art methods of quantitative subjective belief elicitation to assess a decision-maker's financial knowledge. This incentivised approach ascertains how precise a decision-maker's knowledge is, allows for the construction of literacy and welfare measures, tests for bias, and measures decision-makers' level of confidence in their subjective beliefs. Mark Schneider's thesis measures financial literacy in its real environmental contexts, where individuals do not merely store information in their brains but rely on "scaffolded" storage in other people and in media. It begins by measuring the "private" literacy of individual decision-makers. The thesis derives literacy measures of: a group of two individual decision-makers; decision-makers in naturally formed households; and individual decision-makers who can access the Internet. These scaffolds are found to significantly enhance literacy.

Supervisor: Professor D Ross (Economics)

Co-supervisors: Professor G Harrison (Economics); Honorary Professor E Rutström (Economics)

Mohammed Akthar Riad Sultan

Thesis Title: *Marine protected areas in the management of artisanal fisheries*

Mohammed Sultan completed his BSc(Hons) in Economics and MSc in Applied Economics with specialisation with Environmental Policy at the University of Mauritius. He began his PhD in 2012. He is currently an academic member at the Department of Economics and Statistics at the University of Mauritius.

Mohammed Sultan's dissertation investigates the relationship between the Blue Bay Marine Reserve

and artisanal fishermen off the eastern shores of Mauritius. The island's inshore fisheries have been heavily depleted; though the reserve was not established to replenish fish stocks or to benefit fishermen, it has had these effects. The study investigates the behaviours of fishermen affected by the reserve, asking where they fish and what routes they travel. In particular it asks whether fishing effort has concentrated on the borders of the reserve, which would decrease its effectiveness. Catch data on a heavily targeted species, the Bluespine Unicornfish, was collected and used to model its population dynamics, the 'spillover' of mature fish from the reserve into adjoining waters, and the reserve's effects on this resource and the fishermen who target it. The analysis shows the need to recognize fishermen as a factor in the design of marine reserves.

Supervisor: A/Professor A Leiman (Economics)

Co-supervisor: Professor E Muchapondwa (Economics)

In Information Systems:

Abiodun Oyebimpe Alao

Thesis Title: *Contributions of telecentres for women empowerment in rural communities: case of Western Cape, South Africa*

Abiodun Alao holds a BA(Hons) Mass Communication (AAU) and MA degree in Communications from the University of Fort Hare, South Africa. She began her doctoral work in 2014.

Abiodun Alao's thesis focuses on the use of Information and Communication Technologies (ICTs) for development. Specifically, her topic looks at on how telecentres serve as vehicles for women empowerment in rural areas in the developing countries. Her research poses critical questions on how governments and NGOs can use ICTs as pathways towards information and knowledge management in order to improve development. She explored the possibility of constructing a theory by combining concepts from the theories developed to describe how the empowerment of women can be

achieved using telecentres. The model used three theories to guide the study. The assumption is that the interactions between the theories can motivate individual empowerment. This was reflected in the outcome of the dimensions of empowerment indicators (economic, informational, social, political and cultural empowerment). The case study method was used to conduct an in-depth investigation of telecentre usage for women empowerment.

Supervisor: Professor W Chigona
(Information Systems)

Sampson Anomah
Thesis Title: *Modeling a systems-based framework for effective IT auditing and assurance for less regulatory environments*

Sampson Anomah holds an MSc in Accounting and Information Systems from Kingston University, UK. He is a professional accountant with experience in governance and audits. He worked as a lecturer in Ghana before joining UCT for his doctoral studies.

Sampson Anomah's thesis focuses on auditing. He investigates the plausibility of using the cybernetic theory of viable systems approach to design a systems-based IT audit framework for Water Management Information Systems (WMIS), drawing on the strengths of extant best practices. The research employs an action design research strategy and a qualitative research approach during the design phase, and a quantitative research paradigm in the evaluation processes of the conceptual model extracted from the underlying theory. He identifies 20 processes and concepts for effective IT audits and categorises them into six domains constituting the conceptual framework. He assesses the internal consistency and establishes a composite reliability of over 70% for the conceptual framework, confirming its validity and reliability. Sampson Anomah's research produces an artefact that provides extensive guidance to improve IT Audit practice that is contextually suitable for the assurance or audit of organisations in less regulated environments.

Supervisor: Professor M Kyobe
(Information Systems)

Gregory Kunyenje
Thesis Title: *Influence of external actors on national information and communications technology policy formulation in developing countries: case of Malawi*

Gregory Kunyenje holds a BSc in Computer Science from University of Malawi and an MSc in Computing from University of Bradford, United Kingdom. He joined the Faculty of Commerce at UCT in 2016 for his PhD studies. At the time, he was a Computer Science lecturer with University of Malawi.

Gregory Kunyenje's research focuses on the influence of external actors in the formulation of national ICT policies in Africa with Malawi as the case. The thesis examines how external actors and local actors engage with each other during policy formulation. Next, the study identifies the influences that affect policy formulation. Additionally, the thesis investigates the nexus between country context and the influence of the external actors. Policy documents, minutes and reports including interviews are used in the study to investigate the effects. The study finds that the influence of external actors is likely to affect formulation of public ICT policies in poor countries. This thesis makes contributions to knowledge in the use of Bourdieu's theory in the domain of ICT policy formulation and provides insights on how policy makers in developing countries can manage external actors during public policy formulation.

Supervisor: Professor W Chigona
(Information Systems)

Lucy Charity Sakala
Thesis Title: *Resistance to the implementation of learning management systems by lecturers in higher education in a developing country context*

Lucy Sakala holds BSc and MSc degrees in Computer Science from Bindura

University of Science Education (BUSE) and University of Zimbabwe respectively. She joined the Department of Information Systems at UCT in 2014 for her PhD studies. Before joining UCT, she was a Computer Science lecturer at BUSE.

Lucy Sakala's thesis focuses on resistance to the implementation of Learning Management Systems (LMS) in Higher Education Institutions (HEIs) in a developing country context. She investigates how resistance behaviours manifest from lecturers during LMS implementation. She further examines strategies used by management and LMS implementers to mitigate lecturer resistance behaviours. She adopted an integrated conceptual framework comprised of Bourdieu's Theory of Practice and a Multi-level Model of Resistance to Technology Implementation to conceptualise user resistance as well as explain resistance manifestation. Her study relied on both qualitative and case study methodologies. She found that resistance was largely misunderstood by managers whilst poor implementation of ICT projects together with various contextual factors influenced low uptake of LMS. She recommended managers and LMS implementers in HEIs of low-income countries to understand resistance and why it manifests in order to effectively address user resistance through strategies that improve implementation and uptake of ICTs.

Supervisor: Professor W Chigona
(Information Systems)

*Samuel Chiedu Utulu
Thesis Title: *Challenges of information systems innovation in developing country contexts: an inquiry into the adoption of institutional repositories in Nigerian universities*

Samuel Utulu has a bachelor's degree in Library and Information Science and a Master of Information Science from the Africa Regional Center for Information Science, University of Ibadan, Nigeria. The purpose of Samuel Utulu's thesis is to identify and discuss the barriers of information systems (IS) innovation

in developing country contexts using the example of institutional repository innovation projects in three universities in Nigeria. The study adopts an interpretive qualitative inductive research approach to account for factors that come to play at three levels, including, institutional, organisational and individual levels, in IS innovation in developing country contexts. The case study research method is adopted. The study identifies and explains how globalisation trends, institutional logistics and tacit knowledge management impact IS innovation in developing country contexts. The thesis further explains the social and technical factors that promote the infusion of IS innovation at institutional, organisational and individual levels and how this results into IS implementation barriers. In the end, the study provides an actionable framework for managing IS innovation barrier factors that emanates across institutional, organisational and individual levels in developing country contexts.

Supervisor: Professor O Ngwenyama
(Information Systems)

Elizabeth Wanjiku Waithira Wamicha
Thesis Title: *Developing business process analyst competencies through higher education institution interventions - a Kenyan study*

Elizabeth Wamicha holds a business information technology (BBIT) degree and a Master of Science in Information Technology from Strathmore University in Nairobi, Kenya. She has been a lecturer in the Faculty of IT of Strathmore University for ten years.

Kenya is currently experiencing large scale economic growth leading to the need for organizations to have well-defined business processes. This need has driven business process management (BPM) initiatives and the implementation of enterprise resource planning systems. These, in turn, have driven the need for business process analyst (BPA) roles. Elizabeth Wamicha's thesis examines the BPA role within the Kenyan context and identifies critical BPA competencies and that many competencies are

undervalued in the Kenyan context. Her thesis describes how BPA competency-building interventions such as inter-group collaboration and on-the-job/experiential learning are useful in building requisite BPA competencies. The major contribution is the design of a novel BPM curriculum, a first for Kenya. The curriculum design incorporates the 4I framework of organizational learning and activity systems. Evaluation of the curriculum confirms its usefulness for students in building business analysis, business requirements elicitation and business process improvement competencies.

Supervisor: A/Professor LF Seymour
(Information Systems)

2. FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Dean: Professor A. Lewis

DEGREE OF DOCTOR OF PHILOSOPHY

In Chemical Engineering:
Jafaru Musa Egieya
Thesis Title: *Bioenergy supply chain optimisation: a case study of South Africa*

Jafaru Egieya holds a BEng degree in Chemical Engineering and an MEng in Nuclear Engineering from the University of Port Harcourt, Nigeria. Before joining UCT in 2015 for his PhD Studies, he worked with the Nigerian government developing policies geared towards accelerating the generation of electricity from nuclear power plants.

Jafaru Egieya's thesis borders on developing robust supply chain models that analyses the economic, environmental and social benefits of integrating bioenergy products in South Africa's energy economy considering seasonal availability of potential feedstocks and product demand. He uses the General Algebraic Modelling System (GAMS) optimisation software as his modelling platform. The results

show that from the sixteen feedstocks considered to produce specific quantities of bioenergy products to meet demand, wheat silage and triticale silage feedstocks are the most preferred options. Furthermore, the promising nature of the results obtained demonstrates the use of his developed model as a decision support tool in both the public and private sectors to integrate renewable energy production and delivery over an entire supply chain.

Supervisor: A/Professor AJ Isafiade
(Chemical Engineering)
Co-supervisor: Professor L Cucek
(Chemical Engineering)

*Mahdi Ghadiri

Thesis title: *Tomography studies of microscale spatial variations in the leaching of low grade sulphidic and oxide mineral ores*

Mahdi Ghadiri holds a BSc in Chemical Engineering from Semnan University, Iran and an MSc in Chemical Engineering from Iran University of Science and Technology. He joined the Chemical Engineering Department at UCT in 2015 for his PhD studies.

Mahdi Ghadiri's thesis considers heap bioleaching which is a common method for processing of low-grade copper mineral ores. The process suffers from long extraction times and low metal recoveries. A key reason for this is that a substantial fraction of mineral grains is positioned within the solid ore particles. Mahdi's research focuses on using non-destructive 3D X-ray micro-Computed Tomography to investigate the mechanism and behaviour of this non-surface mineral grain leaching. Factors investigated include surfactant addition to leaching solution, agglomeration pretreatment, operating temperature and ore type. A new method is developed for quantification of the mineral leaching by combination of mineralogical analyses, image data and solution chemistry. It is successfully shown that ore type and operating conditions can affect maximum leaching penetration distances and consequently aid in improvement of metal recovery. Imaging conditions are identified which

permit evaluation of biological leaching by X-ray micro-Computed Tomography for the first time.

Supervisor: Dr M Fagan-Endres
(Chemical Engineering)

Co-supervisor: Professor STL Harrison
(Chemical Engineering)

Malibongwe Shadrach Manono

Thesis Title: *Investigating electrolyte-reagent-mineral interactions in response to water quality challenges in the flotation of a PGM ore*

Malibongwe Manono holds a BScEng and MScEng in Chemical Engineering from UCT and a Postgraduate Diploma in Business Management from Regenesys Business School. He joined the Department of Chemical Engineering at UCT in 2015 for his PhD studies as a part-time student and has since July 2016 been employed as a lecturer. Before joining UCT, he worked in the mining industry as a pyrometallurgical engineer and a lecturer at the Vaal University of Technology.

Malibongwe Manono's thesis focuses on water usage within the Platinum Group Mineral mining industry and the implications of water recycling on concentrator performance. Owing to South African mines being primarily located in water scarce regions and the increasing restrictions being placed on industry to use water wisely, this study considered the recirculation of inorganic ions and residual reagents within process water. He considered the interactions of reagents with inorganic ions and found that it is possible to recycle water within an operation with very little impact on valuable mineral recovery, while the greatest impact of water recycling was found to be on the froth phase and therefore the recovery of non-valuable minerals and the grades of valuable minerals need to be considered.

Supervisor: A/Professor KC Corin
(Chemical Engineering)

Co-supervisor: Mrs J Wiese (Chemical Engineering)

Nosaibeh Nosrati Ghods

Thesis title: *Optimization of co-fermentation for bioethanol production from mixed xylose and glucose using free and immobilized cultures: mathematical model and experimental observation*

Nosaibeh Nosrati Ghods holds her BSc in Chemical Engineering from Sharif University of Technology, Iran; MSc in Energy Engineering from Heriot-Watt University, UK. She joined the Chemical Engineering Department, UCT in 2014 for her PhD studies. After finishing her BSc, she worked for the National Iranian Oil Company.

Bioethanol is sought as an addition to fossil fuels where 10% ethanol additive to gasoline will lessen the overall pollution by cars by 54%. Nosaibeh Nosrati Ghods' thesis focuses on maximizing bioethanol yield and productivity from xylose and glucose. Manipulation of process conditions, including operational conditions, process parameters and type of microorganisms were done to increase bioethanol production. She discovered segregation of glucose-fermenting microorganisms from xylose-fermenting microorganisms in two reactors in series in a continuous fashion, using low stirrer, immobilization techniques and fluidised bed gave the best outcome. In this thesis, Nosaibeh Nosrati Ghods improved current kinetic parameters used for in silico modelling of these processes. She managed to optimise current kinetic models with improved agreement between the mathematical models and experimental results. The impact of her thesis has allowed for higher bioethanol production and improved process predictability when using modelling tools.

Supervisor: Dr SL Tai (Chemical Engineering Department)

Co-supervisors: Professor STL Harrison (Chemical Engineering) and A/Professor Adeniyi Isafiade (Chemical Engineering)

Jestos Taguta

Thesis Title: *Relating the enthalpy of immersion to mineral surface hydrophobicity*

Jestos Taguta holds a B.Eng. (Hons) in Chemical Engineering from the National University of Science and Technology, Zimbabwe (2011). He joined the Centre for Minerals Research at UCT in 2014 for his MSc, and then continued with his PhD studies in 2016.

Jestos Taguta's thesis investigates a novel method for measuring the wettability of mineral surfaces using microcalorimetry. He successfully applied this method to differentiate the wettability of a range of economically important minerals, as well as surfactant-coated minerals. His most important contribution was in developing a relationship between this wettability measurement and the flotation performance of the mineral particles. This will be immensely useful in the prediction of flotation performance. He extended the methodology to decouple the wettability of mixtures of minerals, which will have a truly significant impact on predicting flotation performance of real mineral ores.

Supervisor: Dr B McFadzean
(Chemical Engineering)

Co-supervisor: Emeritus Professor C O'Connor (Chemical Engineering)

Petrus Johannes Van Staden

Thesis Title: *Effect of scale of operation on heap leaching performance*

Petrus Johannes van Staden graduated with a BEng. (Chem. Ing.) degree from the University of Pretoria in 1984 (with distinction), and an MSc (Eng) from the University of the Witwatersrand in 1990. He began part-time study towards a PhD in 2015.

In his thesis, Petrus van Staden reports on the fundamental differences between small- and large-scale applications of heap leaching, where metals are extracted by percolating aggressive solutions over crushed rock. By analysing the results of published case studies and of his own experimental work, he could propose quantitative

relationships according to which the rate of movement of chemical agents in the rock mass is affected by the density of the rock mass and by the geometry of the irrigation system. The findings will serve towards replacement of the experience-based rules-of-thumb whereby commercial heap leaching plant specifications are currently drafted, with a fundamental approach that correctly accounts for the various factors that could affect the process.

Supervisor: Professor J Petersen
(Chemical Engineering)

Andries Wynand Van Zyl

Thesis title: *An investigation into the fundamental understanding of an activated sludge bioremediation process and optimisation of thiocyanate and cyanide destruction*

Wynand van Zyl obtained his undergraduate and honours degrees in microbiology and biochemistry at the University of the Free State, before joining the Chemical Engineering department at UCT to complete an MSc on mineral bioleaching before enrolling for his PhD.

Wynand van Zyl's thesis focuses on developing a fundamental understanding of a bioprocess for the treatment of cyanide and thiocyanate containing process water from the gold mining industry. His research uses traditional microbiological methods and advanced molecular biology techniques to characterise the structure of the complex microbial community and understand the metabolic potential of community members. From a process perspective, he illustrates the effective operating window with respect to pH, temperature and thiocyanate concentration. Using continuous reactor systems he determines process kinetics, demonstrates simultaneous destruction of cyanide and thiocyanate and develops a conceptual model to describe the response of the microbial community to stress conditions. Wynand is the first person to show effective thiocyanate degradation in the presence of suspended mine tailings. His research shows that the prevailing theory on what drives

the process is incorrect and presents a credible alternative. The work is already being used to design and optimise treatment plants at commercial scale.

Supervisor: Dr R van Hille (Chemical Engineering)

Co-supervisor: Professor S Harrison (Chemical Engineering)

In Civil Engineering:

John Okedi

Thesis Title: *The prospects for stormwater harvesting in Cape Town, South Africa using the Zeekoe Catchment as a case study*

John Okedi completed his BSc (Hons) Civil Engineering at Makerere University (Uganda) and MSc in Water Resources Engineering at Katholieke University Leuven (Belgium). He was then accepted at UCT as a PhD scholar under the Carnegie Fellowship programme of 'Developing the Next Generation of Academics' for Africa.

John Okedi's PhD research focused on the prospects for stormwater harvesting and reuse as an alternative water resource in Cape Town, South Africa. The study contributes to the debate on alternative water resources by considering the possibilities of stormwater harvesting from surface and groundwater storage for supply to potable and non-potable demands. The factors that were determined to be important and needed to be considered for the efficacious application of a stormwater harvesting system included inter alia the availability of storage (surface or groundwater), the catchment characteristics (terrain, soil types, level of development, population density), and seasonal availability of the stormwater resource (winter or all year rainfall). The study also determined that land use and climate changes will likely affect the quantity of harvested stormwater in the future. Having considered these factors, this study found that stormwater is a viable water resource in the Zeekoe Catchment especially for potable water use.

Supervisor: Professor N Armitage
(Civil Engineering)

Laxmee Sobhee-Beetul

Thesis Title: *Ground improvement using PET bottle waste as a potential reinforcement material for granular columns: An experimental approach*

Laxmee Sobhee-Beetul holds a BScEng and MScEng degree in Civil Engineering from UCT. She joined UCT as an undergraduate student in 2006 and subsequently registered for her PhD in 2013. Her area of specialisation is geotechnical engineering within the Department of Civil Engineering.

Laxmee Sobhee-Beetul's thesis focuses on improving grounds for construction projects by using an old technique made from columns of sand which are installed in the ground. She also investigates the possibility of making these columns stronger so as to further increase the strength of the ground. She considers including plastic bottle waste within them as an initiative to reduce plastic waste thrown into landfills. She performs laboratory experiments using different products made from these wastes and inserted them in various ways in the columns. She then studies the observations made and finds out that some of the waste products from the bottles improved the strength of the ground. She additionally confirms that the quantity and way of incorporating the waste plastic in the sand columns directly affects the gain in strength. She hopes that the technology can assist with solid waste management of plastic bottles.

Supervisor: Associate Professor D Kalumba (Civil Engineering)

In Electrical Engineering:

*Zeeshan Aleem

Thesis Title: *Improvement in control and gain aspects of impedance source inverters and converters*

Zeeshan Aleem holds a BSc in Computer Engineering from Comsats University, Pakistan and Masters in Energy Engineering from Kyungpook National University (KNU) South Korea. He joined the Electrical Department at UCT in 2016 for his PhD studies. Before joining UCT, he worked in KNU as a

Researcher in South Korea.

Zeeshan Aleem's thesis focuses on the study of renewable energy systems, especially Photo-voltaic systems (PV) and their applications. He investigates the factors which are vital and significant in the efficiency of these PV systems. He uses power conversion methods based on power electronic inverters/converters and has furthered his research by designing new advanced power inverters to greatly increase efficiency (up to 92%) of a PV system, providing more cost-efficient solutions. He started by investigating the quality of previously used inverters and compared them with new designed inverters and found them to be of high quality and more reliable. He extends his research by modifying and implementing new control strategies that leads to less complexity, simpler control and overall improved spectral performance of the PV system.

Supervisor: Dr S Winberg (Electrical Engineering)

Co-supervisor: Dr M Hanif (Higher Colleges of Technology)

Leokadia Ndeapo Popyeni Nepaya
Thesis Title: *Practical realization of multiband planar filters on multilayer substrates*

Leokadia Nepaya holds a BSc in Physics from Central China Normal University, (CCNU) and Meng degree in Electronics from Beijing University of Aeronautics and Astronautics, (BUAA) China. She joined the Faculty of Engineering and the Built Environment at UCT in 2013 for her PhD studies. Before joining UCT, she worked as the lecturer at the University of Namibia, Namibia.

Leokadia Nepaya research focused on design of multiband filters for microwave systems. Current design methods for single band filters are infeasible for all but the simplest multiband cases. The existing group-delay based method for design is highly problematic for design convergence in the multiband case. Her research developed new techniques to enable implementing multiband filters according to specification. She

implemented the filters on multilayer laminates, showing that it is possible to use the multilayer layout to increase the degrees of freedom for design and make these filters less sensitive to manufacturing tolerances.

Supervisor: A/Professor R Geschke (Fraunhofer FHR, Microwave Engineering)

In Construction Economics & Management:

*Momoh Ohiomah Oboirien

Thesis Title: *Modelling cost and time performance of public building projects*

Momoh Ohiomah Oboirien holds BSc and MSc degrees in Building Technology and Construction Management from Obafemi Awolowo University, Ile-Ife and Ahmadu Bello University, Zaria, Nigeria. He was a Chief Lecturer at Auchi Polytechnic, before joining the Building Department, Modibbo Adama University of Technology, Yola, Nigeria.

Momoh Oboirien's thesis focuses on the variability between construction projects initial and final construction cost and duration. It also investigates the factors responsible for delays on construction projects in North-Eastern Nigeria. He finds that delays in providing contract information, payments to contractors and inadequate prime cost and provisional sums are the main causes of cost overrun, while insecurity and insurgency related factors are the main causes of delays on construction projects in the study area. His study also established a forty-nine and fifty-five percent cost and time overrun across the study area respectively. He designed Artificial Neural Network impact assessment models for construction projects using the established cost and time drivers. He recommends the models for conversion into Dashboard that construction professionals could use in prompt identification of cost and time overrun factors on construction projects and for monitoring performance.

Supervisor: A/Professor AO Windapo (Construction Economics and Management)

Co-supervisor: Professor HA Odeyinka (Obafemi Awolowo University)

In Geomatics:

Lopang Maphale

Thesis Title: *Constraints Oriented Approaches in Advancing Spatial Data Infrastructure: Case of Southern African Customs Union*

Lopang Maphale obtained BSc(Hons) qualifications at University of East London (UK), Master of Business Administration at University of Botswana, MSc GIS from University of Leeds (UK) and began full-time study towards his PhD at UCT in 2016.

Lopang Maphale's thesis concentrated on system development, where constraints are advanced as responsible agents in slow development of Spatial Data Infrastructures (SDIs) in the African continent. He scoped his work to Southern African Customs Union (SACU). Specifically, he extracted SACU country results from the previous and temporal assessments of SDIs development in Africa to support a system analysis and development approach he named SDI On-Going Improvement (SDIOGI). Through previous SDI Assessments and fieldwork in SACU members, he has proposed a constraint-oriented SDI development approach anchored on analytical exploitation and focussing of the following agents; Macro-environment, Organisation, Informational, Legal, Marketing, Financial, Technology and Management as Composite Constraints in SDI. He has used the findings to propose a concept and framework of SACU-SDI with purposes of promoting regional economic mandate along sustainable environmental concerns.

Supervisor: A/Professor JL Smit (Geomatics)

In Materials Engineering:

Ryan Paul Matthews

Thesis Title: *Oxidation kinetics of 316L stainless steel in the pressurised water reactor environment*

Ryan Matthews completed his BSc in Physics, and MSc in Materials Engineering at the University of Cape Town. While working for Eskom at Koeberg Nuclear Power Station he returned to UCT to begin his PhD within the Centre for Materials Engineering in 2013.

Ryan Matthews' thesis characterised and modelled the kinetics of oxide growth on 316L stainless steel in high temperature water environment. In particular, the influence of temperature on oxide growth was studied, with decreasing growth kinetics measured as temperature increased from 290°C to 360°C. He proposes that this counter-intuitive finding is due to the coherency across the metal/oxide film interface degrading as temperature increases and he was able to substantiate this explanation through observation using advanced electron microscopy techniques. He has shown that with reduced coherency the movement of ions across this interface is impaired, and oxide growth is reduced. Owing to the link between oxide growth and crack initiation, this research is a contribution towards improving prediction of crack behaviour in stainless steel within pressurised water nuclear reactors.

Supervisor: Professor R Knutsen
(Materials Engineering)

In Mechanical Engineering:

Excellent Zibhekele Gwebu

Thesis Title: *A methodology for integrated thermofluid modelling of radiant superheaters in steady state and transient operations*

Excellent Gwebu received both his BSc and MSc degrees in Mechanical Engineering from UCT, which he originally joined in 2009 from eSwatini. In 2015 he enrolled for his PhD studies in the Eskom Power Plant Engineering Institute's Energy Efficiency research unit hosted within UCT's Department of

Mechanical Engineering.

Excellent Gwebu's thesis entails the development of a methodology to model the thermofluid processes that occur in radiant superheater heat exchangers of coal-fired power plant boilers. These heat exchangers are exposed to very high temperature flue gas from the furnace that exchanges heat with the high-pressure steam that drives the turbine coupled to a generator. These models can be employed to study the complex heat transfer and fluid flow phenomena that may occur during intermittent, transient and low load operation. The methodology is based on a network approach that solves the transient one-dimensional conservation equations. He demonstrated the methodology on two different superheaters. It allows the prediction of the detailed mass flow and temperature distributions and the results compared well with real-plant measurements. The model was applied to demonstrate the impact of different operational conditions and transients on the heat exchanger tube metal temperatures.

Supervisor: Professor PG Rousseau
(Mechanical Engineering)

Co-supervisors: Professor AG Malan
(Mechanical Engineering) and
Professor LM Jestin (Mechanical
Engineering)

Serguei Igorevich Petrov

Thesis title: *Fracture in polycrystalline diamond. Investigating cracking and toughness behaviour using a miniature double torsion technique*

Serguei Petrov completed his BSc and MSc qualifications at UCT, and began his full time studies towards his PhD in 2013.

Serguei Petrov's thesis reports the findings of developing a miniature double torsion (DT) technique for location in-situ inside a scanning electron microscope (SEM) in the study of crack initiation and propagation mechanisms and fracture toughness properties in synthetic polycrystalline diamond (PCD) material. The technique was shown to be successful in initiation and propagation of micro-cracks in a highly

controllable manner. The technique allowed for toughness characterisation in various grades of PCD and enabled observation of the propagation phenomena as a function of the material's microstructure. In addition, the surface stress intensity factor (SIF) and hence toughness of PCD, was successfully evaluated employing digital image correlation (DIC), an optical full field displacement measuring technique, which enables measurements without any contact with the specimen. These techniques will be useful in the future fracture mechanics studies in PCD and other brittle materials. This research is seen as making a significant contribution to the understanding of toughness and cracking in PCD, with realistic potential for engineering advancements.

Supervisor: Emeritus Professor R Tait
(Mechanical Engineering)

Co-supervisor: A/Professor T Becker
(Stellenbosch University, Division of
Mechanics)

3. FACULTY OF HEALTH SCIENCES

Interim Dean: Professor C. Williamson

DEGREE OF DOCTOR OF PHILOSOPHY

In Biological Anthropology:

Devin Alexander Finaughty

Thesis Title: *The establishment of baseline data on the rates and processes of soft-tissue decomposition in two terrestrial habitats of the Western Cape, South Africa*

Devin Alexander Finaughty holds a BSc in Zoology and Physiology, and a BSc(Med)(Hons) in Biological Anthropology from UCT. His interest in forensics was nurtured in his honours project and led directly to his current PhD research.

Devin Finaughty's thesis examines the decomposition standards for the post mortem interval in the Cape Flats environment of the Western Cape Province. Using pig

cadavers as models for human bodies, he tracked the stages of decomposition in both open Strandveld and closed Port Jackson environments in locations that are similar to those where police cases have been recovered. Devin Finaughty's research has highlighted both the climatic and faunal factors in decomposition rates and although he has clarified the important role of insect decomposers, he has added a previously overlooked mammalian agent in the decomposition process. The Cape grey mongoose has been shown in this work to have an important role in opening the body for insect colonisation. This research is directly applicable to forensic cases in South Africa and will provide a time since death benchmark for forensic pathologists working in the Western Cape region.

Supervisor: Emeritus Professor A Morris (Human Biology)

In Chemical Biology:

*Fleury Augustin Fleury Nsole Biteghe
Thesis Title: *Comparison of the therapeutic efficacy of SNAP-tag fusion protein and the synergistic actions of chemotherapy and photodynamic therapy in killing resistant melanoma*

Fleury Nsole Biteghe holds a BSc in Biotechnology from the University of the Western Cape, a BSc(Hons), and an MSc(Med) in Cell Biology from UCT. For his PhD studies he joined the Department of Human Biology in 2016 and continued at the Department of Integrative Biomedical Sciences (IBMS) as of year 2017.

Fleury Nsole Biteghe's thesis focuses on developing improved immunodiagnostic and therapeutic agents with reduced immunogenicity and improved cancer specific activity targeting melanoma skin cancer in South African patients. Results from this project showed that, these novel disease-specific therapeutic agents, were able to specifically detect and kill melanoma cells overexpressing specific biomarkers, while sparing normal cells. Therefore, through the results generated, this project aimed at developing scarce skills and future intellectual property.

Proper exploitation might attract further private and public support not only sustaining excellent research but also future employment. This will ultimately train students to develop entrepreneurial skills, they would need to take the scientific lead in new small, medium and microenterprises (SMMEs) driving the creation of clinically relevant human biopharmaceuticals on the African soil.

Supervisor: Professor Dr S Barth (Integrative Biomedical Sciences)
Co-supervisor: Dr E Padayachee (Integrative Biomedical Sciences)

Palesa Pamela Seele
Thesis Title: *Characterisation of dysregulated proteins in macrophages infected with Mycobacterium smegmatis focusing on matrix metalloproteases and their effectors*

Palesa Seele completed her BSc, BSc(Hons) and MSc in Molecular and Cell Biology at the University of the Witwatersrand. She registered for her PhD at UCT in 2013.

Palesa Seele's thesis focuses on understanding the role of matrix metalloproteases (MMPs) in response to Mycobacterial infection. Using the avirulent and fast-growing strain Mycobacterium smegmatis, her research showed the activity of MMP-1, but not MMP-9, was suppressed in macrophages following infection. Using proteomics and bioinformatics MMP 9 and TIMP-1 were found to be upregulated in infected macrophages. She went on to evaluate factors that could be regulating this response, and the proteomics data suggest that MMPs are regulated through the interleukin-1beta and COX pathways, amongst others. This study also postulates that communication between cells is carried through exosomes that carry DNA, RNA, proteins and DNA/RNA binding proteins. In contrast, macrophages stimulated with the cell wall component of Mycobacterium tuberculosis, lipoarabinomannan (LAM), did not increase the activity of MMP-9. Evidence of chromatin and extracellular traps in the secretome indicates a possible role in regulating

transport of LAM across the glomerular basal membrane.

Supervisor: Professor E Sturrock (Integrative Biomedical Sciences)
Co-supervisor: Professor J Blackburn (Integrative Biomedical Sciences)

In Clinical Science & Immunology:
Muchaneta Mugabe

Thesis Title: *Diversity of vaginal microbiota associated with bacterial vaginosis and the impact on pregnancy outcomes in HIV-infected and uninfected women*

Muchaneta Mugabe holds an MSc Medical Microbiology (University of Zimbabwe), MBA (University of Nicosia), Diploma in Medical Laboratory sciences (ZIMLS) BEd. Biology (Cuba). She joined the immunology division at UCT in 2016 for her doctoral studies. Before joining UCT, she worked in the national microbiology reference laboratory in Zimbabwe as a principal scientist and survey coordinator.

Muchaneta Mugabe's thesis focuses on maternal and neonatal health outcomes. She concentrates mainly on the role played by commensal bacteria on adverse birth outcomes, with the aim of improving understanding of the burden of certain maternal and neonatal adverse outcome-related vaginal pathogens not only in Zimbabwe but in sub-Saharan Africa. She further investigates factors which could be driving differences in pregnancy outcomes which including maternal host immune and inflammatory response and HIV status. To date there is no documented data on vaginal microbiota in relation to pregnancy outcomes in sub-Saharan Africa. As such, the identification of specific organisms associated with adverse pregnancy outcomes could lead to interventions or diagnostic algorithms to prevent and predict these outcomes in this population.

Supervisor: A/Professor H Jaspan (Pathology)
Co-supervisors: Dr L Masson (Pathology); A/Professor RT Mavengwa (Medical Microbiology; University of Zimbabwe)

Michael Zakhele Zulu

Thesis Title: *Characteristics of decidual macrophages and Hofbauer Cells in placentas of HIV positive women on antiretroviral therapy*

Michael Zulu holds a BSc, BSc(Hons) and an MMedSc degree in Virology from the University of KwaZulu-Natal, Durban. He joined the Division of Immunology at UCT in 2015 for his PhD studies.

Michael Zulu's thesis focuses on understating the impact of HIV and the duration of antiretroviral drug exposure on the phenotype and function of decidual macrophages and Hofbauer cells of the human placenta. He used immunohistochemistry to characterize decidual macrophages and Hofbauer cells of placentas from HIV-1 infected women who initiated antiretroviral therapy during pregnancy (Initiating ART) and before pregnancy (Stable ART). He concluded that the duration of ART drug exposure has no effect on the expression of M1 and M2 markers of macrophages by decidual macrophages and Hofbauer cells. To identify novel markers for decidual macrophages and Hofbauer cells, he used the Human Protein Atlas database to identify genes that highly expressed in the human placenta and identified FXIII A1 and IGF-2 as potential new markers of Hofbauer cells and decidual macrophages, respectively. He also developed a strategy of identifying new markers for tissue-resident immune cells.

Supervisor: Professor CM Gray (Pathology)

In Exercise Science:

Marelise Badenhorst

Thesis Title: *Life after the game: consequences of acute spinal cord injuries in South African rugby union players*

Marelise Badenhorst completed her BSc and MSc degrees in Physiotherapy at Stellenbosch University. Before joining UCT in 2015, she worked as clinician in private practice. Her PhD is a joint project between UCT and Vrije

University Medical Centre, Amsterdam. Marelise Badenhorst's thesis explores the consequences of spinal cord injuries in South African rugby players. She compares the injury rates between the rugby regions of South Africa and shows significant differences in the occurrence of these injuries amongst the different regions. She investigates the injury experience from the players' perspective, including the context around the injury, mechanism of injury, and perceived contributing factors. She also investigates the factors related to optimal immediate medical management of these injuries and shows that transportation delays and admission to appropriate medical facilities were important barriers. Furthermore, she investigates factors related to long-term healthcare, and shows that quality of care, affordability and transport were important barriers for lower socio-economic groups. Lastly, her findings show that players with lower levels of participation and income, certain levels of education, increased health concerns and who use public healthcare, have lower levels of Quality of Life.

Supervisors: Professor M Lambert (Human Biology); Professor W van Mechelen (Vrije University Medical Centre)

Co-supervisors: Dr J Brown (Stellenbosch University); Professor E Verhagen (Vrije University Medical Centre)

Lester Ezra Joseph

Thesis Title: *The South African National Educator Wellness Study (SA-NEWS)*

Lester Joseph holds a Bachelor of Physical Education and MED degrees from the University of the Witwatersrand. He enrolled in the Department of Human Biology, Faculty of Health Sciences at UCT in 2011 for his PhD research.

Lester Joseph's thesis focuses on South African educators, recognised as an "at risk" population for non-communicable diseases. In consultation with the Department of Basic Education, and using an intervention mapping

approach, a tailored print and SMS-text communication intervention was developed and implemented in 27 primary schools, located in Gauteng and Western Cape provinces. The thesis explores the effectiveness of this intervention, in addition to standard-of-care feedback following wellness day screening, on changes in health risk status, when compared to standard-of-care alone. The intervention resulted in significantly greater reductions in prevalences of overweight, obesity and hypertension than standard-of-care condition. There was a significant increase in leisure time physical activity (PA) in the intervention compared to standard-of-care group. This low-cost, potentially scalable, tailored print and SMS-text messaging intervention was shown to be effective in changing health risk status, feasible to implement, and acceptable to this "at risk" group of South African educators.

Supervisor: Professor EV Lambert (Human Biology)

Co-supervisors: Dr C Draper (Human Biology, University of Cape Town and the University of the Witwatersrand, Paediatrics)

Dr T Kolbe-Alexander (School of Health & Wellbeing, University of Southern Queensland)

In Human Genetics:

Laura Jane Heathfield

Thesis Title: *Sudden unexpected death in infants: a forensic genetic investigation in a South African cohort*

Laura Heathfield completed her BSc, BSc(Med) Hons and PGDip qualifications at UCT, and also holds an MSc from the University of Strathclyde, Glasgow. She re-joined UCT in 2014 as a lecturer in forensic genetics, and completed her PhD while working fulltime.

Laura Heathfield's thesis explores the under-researched environment surrounding sudden and unexpected death of infants in South Africa and why so many babies in our country experience this devastating event. This project involved the thorough assessment of post-mortem records

which revealed cultural-specific and modifiable risk factors, and showed that infections were prominent. The highly sensitive issue of recruiting grieving and vulnerable families for forensic genetics research was addressed, and ethical guidelines in this regard were put forward. The subsequent analysis of DNA from infants who had demised suddenly and expectedly resulted in the discovery of associated genetic variants, as well as specific variants which were able to explain some of these tragedies. With the help of genetic counsellors, this information has been given back to family members, with the intention of linking at-risk relatives with appropriate medical care to ultimately save lives.

Supervisor: Professor R Ramesar (Pathology)

Co-supervisor: Professor L Martin (Pathology)

Kamogelo Lebeko

Thesis Title: *Genetic aetiology of autosomal recessive non-syndromic hearing loss in sub-Saharan African patients: evaluation using targeted and whole exome sequencing*

Kamogelo Lebeko holds a BSc in Genetics and Biochemistry and BSc(Med)(Hons) in Human Genetics from UCT. In 2014 she registered for her MSc in the Division of Human Genetics, and upgraded to a PhD in 2016.

Kamogelo Lebeko's thesis focuses on the genetic causes of congenital hearing loss (HL) among patients of African descent. She uses a stepwise, single gene followed next generation sequencing, approach to uncover the genetic variations which are the cause of HL in a cohort of patients from both Cameroon and South Africa. She highlights that the most common HL genetic causes found in Europeans and Asians populations are not significant in sub-Saharan Africans. She uses the most comprehensive genetic diagnosis panel to uncover the cause of HL in 7/10 Cameroonian families, and discovered a total of 5 novel mutations. She further uses whole exome sequencing (WES), to investigate the unresolved families where she identifies a novel variant in

a gene previously associated with HL only once, GRXCR2. Her research has shown the feasibility and efficiency of using WES to identify novel mutations in HL in African populations.

Supervisor: Professor A Wonkam (Pathology)

Co-supervisors: Professor C Dandara (Pathology); Dr S Mowla (Pathology)

In Medical Biochemistry:

Aderonke Fopesaye Ajayi-Smith

Thesis Title: *Investigating the nuclear import protein Kpnβ1 as cancer therapeutic target*

Aderonke Ajayi-Smith holds a BSc in Microbiology from Bowen University in Nigeria and an MSc in Molecular Pathology and Genomics from the Queen Mary University of London.

Aderonke Ajayi-Smith's research was aimed on the development of a novel targeted therapy for cancer with the focus on cervical and oesophageal cancers. These cancers have increasing incidence and mortality rates globally and in South Africa. There is thus a need to discover novel anti-cancer targets that would lead to the development of new and more effective treatment strategies. Her thesis highlighted the role of Karyopherin Beta 1 (Kpnβ1), a nuclear import protein in the development and progression of cancer. Aderonke used in vitro and in vivo animal models to investigate the anti-cancer activity of INI-60, a potential small molecule inhibitor of Kpnβ1. Her research shows that INI-60 targets Kpnβ1 and inhibits the nuclear import of its cargo proteins such as NFKB and NFAT. INI-43 also interferes with cancer cell biology, specifically inhibiting cancer cell growth, migration and invasive potential. The results obtained from this study provides evidence for nuclear import inhibition as a novel anti-cancer approach for cancers of different tissue origin. These findings will be useful in the development of clinically relevant targeted cancer therapies.

Supervisor: Professor Virna Leaner (Medical Biochemistry)

In Medical Cell Biology:

Jenna Susan Bleloch

Thesis Title: *Identifying novel drugs for the treatment of rhabdomyosarcoma*

Jenna Bleloch holds a BSc in Genetics and Human Physiology and a BMedScHons in Medical Cell Biology from UCT. In 2015 she registered for a MSc which was subsequently upgraded to a PhD.

Jenna Bleloch's thesis focuses on identifying novel drugs for the treatment of the aggressive paediatric cancer rhabdomyosarcoma (RMS). Her research adopts a two-pronged approach. Firstly, she identifies the palladium-based compound, AJ-5, and its more water-soluble derivate BTC2, as potent and selective anti-cancer drugs in RMS. Her work reveals that AJ-5 exerts its anti-cancer activity through the induction of DNA damage and the apoptotic and necroptotic cell death pathways and that it has a favourable safety and pharmacokinetic profile. In her second approach she employs a target-based high throughput drug repurposing strategy and identifies and successfully validates the FDA approved drugs, niclosamide, piroctone olamine and pyrvinium pamoate, as drugs that could be repurposed to treat RMS.

Supervisor: Professor S Prince (Medical Cell Biology)

In Medical Microbiology:

Leila Hussein Abdullahi

Thesis Title: *Adolescent immunisation in Africa in the decade of vaccines*

Leila Hussein Abdullahi completed her MPH at UCT in 2012 and began full-time study towards her PhD in 2013.

Leila Abdullahi's thesis focuses on immunisation of adolescents, a group that does not derive optimal public health benefits from such a programme. Absence of structured programmes to vaccinate this population group, particularly in LMICs, is the main reason for suboptimal uptake. A mixed methods evidence synthesis approach was adopted to understand the obstacles and likely solutions needed to improve adolescent immunisation in LMICs. One

of the main findings is that interventions that include health education may be most successful when implemented in combination with others that address multiple factors. In addition, the challenges, experiences and lessons learnt from the pilot studies of recent HPV vaccination introduction programmes are extremely useful and should be seen as an ideal platform to build adolescent vaccination programmes more generally. Overall, these studies will be useful to inform policy makers on the dynamics associated with uptake of vaccines among adolescents.

Supervisor: Emeritus Professor G Hussey (Pathology)

Co-supervisors: Professor C Wiysonge (Public Health and Family Medicine); Dr B Kagina (Public Health and Family Medicine)

Rosanna Morning Boyd

Thesis Title: Rifampicin-resistant tuberculosis in Botswana: barriers and risk factors influencing patient outcomes, case detection, and linkage to effective care and treatment

Rosanna Boyd holds a BSc in Biology from Shorter College, United States and an MPH from Armstrong University, United States. She joined the School of Health Sciences at UCT in 2014 for her PhD studies. Before joining UCT, she worked in public health in Malawi and Botswana.

Rosanna Boyd's thesis focuses on rifampicin resistant tuberculosis (RR-TB) in Botswana and barriers and risk factors, which influence diagnosis, treatment and patient outcomes. She investigates factors associated with mortality, access to diagnostic testing for patients with, or at risk of, RR-TB, time to start of appropriate treatment, and patient and provider experiences with RR-TB management. She uses routine national TB programme and laboratory data collected for patients in Botswana, as well as qualitative data she collected through in depth interviews. Rosanna Boyd's data analysis reveals several factors negatively influencing case detection and RR-TB mortality, including patient

level clinical and demographic factors as well as weaknesses in the health system and a lack of national level political support for the programme. Several recommendations for improvement are identified and highlighted in her research.

Supervisor: A/Professor H Cox (Medical Microbiology)

In Medical Virology:

Shaun Lawrence Barnabas

Thesis Title: Sexually transmitted infections, bacterial vaginosis and genital inflammation as risk factors of HIV acquisition in adolescent girls and young women in South Africa

Shaun Lawrence holds an MBChB from UCT, Diplomas in Child Health and HIV Management, a Fellowship in Paediatrics and a Certificate in Paediatric Infectious Diseases from the Colleges of Medicine and Paediatrics of South Africa.

Shaun Lawrence's thesis evaluates biomedical and behavioural risk factors for HIV acquisition in adolescent girls and young women in South Africa. This study evaluates the prevalence of sexually transmitted infections (STIs) and bacterial vaginosis (BV) as drivers of genital inflammation associated with HIV risk in two cohorts of young women from Masiphumelele, Cape Town and Soweto, Johannesburg. High levels of risky sexual behaviour and a very high prevalence of STIs and BV had a marked effect on genital inflammation in adolescents. This thesis demonstrates that adolescent girls and young women had unique risks that contribute to their high HIV incidence and provides important insight towards implementation of youth-tailored HIV prevention strategies.

Supervisor: A/Professor J-A Passmore (Pathology)

Co-Supervisors: Professor L-G Bekker (Medicine) and Dr L Masson (Pathology)

Iyaloo Konstantinus

Thesis Title: Effect of progestin-based hormonal contraceptives on genital inflammation and Th17 cell activation in adolescents at high risk for HIV infection

Iyaloo Konstantinus, born and schooled in northern Namibia, came to UCT in 2011 for her BSc(Med)(Hons) in Human Genetics. She completed her MSc in the Medical Virology in 2016.

Iyaloo Konstantinus' thesis evaluates the impact of several hormonal contraceptives (NuvaRing, NET-EN and oral contraceptive pills) on biomarkers of HIV risk in the lower reproductive tracts of adolescents, with particular focus on inflammatory cytokine responses and cervical CD4 T helper-17 cell activation. Since certain HCs are associated with increased HIV risk, this research aimed to understand biomedical mechanisms underlying this such as activation of CD4 T cells that are HIV target cells. Iyaloo's research showed that highly-activated Th17 cells were the major mucosal CD4 subset in young adolescents. While no differences in Th17 cell frequencies were noted between study arms, those using NuvaRing had more activated Th17 cells and higher levels of Th17-related cytokines than adolescents using COCPs or NET-EN.

Supervisor: A/Professor J-A Passmore (Pathology)

Co-supervisors: A/Professor H Jaspan (Pathology); Dr L Masson (Pathology)

Alltalents Tutsirayi Murahwa

Thesis Title: Characterisation and evolutionary dynamics of ten novel Gammapapillomavirus types from South African penile swabs

Alltalents Murahwa received his BSc (Hons) in Medical Laboratory Sciences and MPhil majoring in Immunology from the University of Zimbabwe.

Alltalents Murahwa's thesis reports the discovery, genomic characterisation, phylogenetic analysis and the evolutionary dynamics of ten novel human papillomaviruses (HPV). The novel HPV types demonstrated

the classical genomic organisation of Gamma-HPVs, with the exception of one of the viruses (HPV214) that lacked an essential E6 open reading frame. Phylogenetically the novel Papillomaviruses (PVs) all clustered with Gamma-HPV genus. He further examined variation of the novel types in clinical specimens from which they were identified and showed that 5 of the novel viruses had intra-sample variation. All talents then used the genome sequences of the ten novel viruses and related HPVs to analyse the evolutionary dynamics of these viruses at the whole genome and individual gene scales and found statistically significant incongruences between the phylogenetic trees of different genes implying gene-to-gene variation in the evolutionary processes of Gamma-HPVs. The last common ancestor (LCA) of the present day Gamma-HPVs was predicted to have existed between 49.8 million years ago, well before the existence of human precursors. These findings expand our knowledge of PVs and of the scarcely studied Gamma-HPVs.

Supervisor: Professor A-L Williamson (Pathology)
Co-supervisor: Dr TL Meiring (Pathology)

In Medicine:

Mahmoud Mohamed Werfalli
Thesis Title: *Informing the development of a self-management care programme for older people with type 2 diabetes attending community health centres in Cape Town, South Africa*

Mahmoud Werfalli holds MBChB and MPH degrees from the University of Northumbria at Newcastle, UK. He has been involved in epidemiology and primary healthcare research and academic teaching activities at the University of Benghazi, Libya since 2006. Mahmoud Werfalli has been a PhD student at the Chronic Diseases Initiative for Africa (CDIA) in the Department of Medicine.

Diabetes is a growing global burden and is common in the older population. As with any chronic, self-management is key to the prevention

of complications relating to diabetes. Mahmoud Werfalli's thesis set out to inform the development of a self-management programme for older persons with diabetes at the primary care level. Main findings were that diabetes is associated with poor quality of life and greater disability in older South Africans, particularly those with a low level of education and low socio-economic status, and that knowledge of diabetes relating complications in the study sample was poor. Social support of family and friends in the self-management of the disease was associated with enhanced knowledge and self-care practices. Policy makers and health professionals are advised of a need for tailored education on diabetes for older persons that emphasises the importance of family and friends in its care management.

Supervisor: Professor N Levitt (Medicine)
Co-supervisor: A/Professor SZ Kalula (Medicine)

In Neuroscience:

Nicole Justine Phillips
Thesis Title: *HIV-associated cognitive disorders in children and adolescents: methodological investigations and validating a quick screening tool*

Nicole Phillips holds a BSc(Hons) in Psychology from Stellenbosch University, and an MSocSc from UCT. She joined the department of Psychiatry and Mental Health at UCT in 2008 as a research assistant, and as a PhD student in 2013.

Nicole Phillips' thesis focuses on methodological investigations and validating a screening tool for HIV-associated cognitive impairment in perinatally HIV-infected children and adolescents. She systematically reviewed and meta-analysed literature on cognitive impairment in HIV-infected youth and found that executive function was most severely affected by the virus. She demonstrated that separate composite scores for each cognitive domain provides more accurate assessments of the individual's real-world impairment than global

scores. She also demonstrated the association between cognitive and functional impairment and the risk of having functional impairment in the presence of cognitive impairment. This work has also shown that asking youth about repeated grades at school could potentially be a quick screening question to establish if the adolescent has functional impairment. Adding the repeat grade question to the International HIV Dementia Scale provides us with a valuable quick screening tool which could address the issue of lack of screening due to an overburdened healthcare system.

Supervisor: A/Professor J Hoare (Psychiatry and Mental Health)
Co-supervisors: Professor DJ Stein (Psychiatry and Mental Health); A/Professor K Thomas (Psychology)

In Nursing:

*Ayishetu Uduoye Musa-Maliki
Thesis Title: *Adaptation of the abuse assessment screening tool for midwives in northern Nigeria*

Ayishetu Musa-Maliki, a registered nurse and midwife, holds a bachelor's degree in nursing sciences and a master's in Disaster and Risk Management from the Ahmadu Bello University, Zaria-Nigeria. She began her PhD programme in Nursing at UCT in 2015.

Ayishetu Musa-Maliki's thesis focuses on the midwives' screening practice of Intimate Partner Violence (IPV) among pregnant women in a northern Nigerian hospital. It also seeks to adapt the Abuse Assessment Screen (AAS) tool to aid the midwives screening practice. She found that contrary to global best practices for reducing harm to mother and their unborn children. The midwives in the hospital do not routinely screen pregnant women for IPV. She also discovered various factors that hinder midwives' screening practice for IPV which were both external and internal to the midwives. The hindrances prompted the development of a new IPV screen tool as a modification of the AAS tool to ease IPV screening. She found that adequate training of midwives will reduce the

internal factors to a minimal while, the intervention of both the government and the hospital management will eliminate external factors hindering their screening practices.

Supervisor: Dr N Fouche (Health and Rehabilitation Sciences)

Co-supervisor: Professor SE Duma (Nursing, University of KwaZulu-Natal)

In Physiotherapy:

Emmanuel Bonney

Thesis Title: Movement programmes to enhance motor competence and physical fitness among high school girls in a low-income community of Cape Town, South Africa

Emmanuel Bonney is a physiotherapist and holds a master's degree in Physiotherapy (Physical Therapy and Rehabilitation) from the Central South University in China. He worked as an assistant lecturer at the University of Ghana before joining UCT in 2015 to pursue his PhD studies.

Emmanuel Bonney's thesis evaluates the efficacy of different exercise interventions among South African high school girls attending school in low-income settings of Cape Town. He starts by investigating the impact of two novel exercise protocols among adolescent girls with motor coordination problems (Developmental Coordination Disorder). Next, he compared the effects of these interventions among groups of girls who are overweight and obese, finding that activity-based interventions are capable of increasing motor competence, physical fitness and components of self-efficacy. He attributes the success of the interventions to several factors including enjoyment, motivational feedbacks, and task loading. The findings of Emmanuel's thesis could help improve physical education in high schools in resource-limited communities of South Africa and other countries with similar conditions. Additionally, the findings might guide health professionals working in school settings to prescribe evidence-based interventions to treat motor coordination deficits, to improve

physical fitness and address obesity-related motor impairments.

Supervisors: Dr G Ferguson (Health and Rehabilitation Sciences)

Co-supervisors: Professor Dr B Smits-Engelsman (Health and Rehabilitation Sciences); Dr T Burgess (Health and Rehabilitation Sciences)

In Psychiatry:

Taryn Williams

Thesis Title: Pharmacotherapy for social anxiety disorder and posttraumatic stress disorder: new meta-analytic approaches to synthesising the evidence

Taryn Amos holds a master's degree in Research Psychology from the University of the Western Cape. She joined the Department of Psychiatry and Mental Health at UCT in 2011 as a research assistant and as a PhD student in 2013.

Taryn Amos' thesis focuses on new meta-analytic ways of synthesising data for the pharmacotherapy of social anxiety disorder (SAD) and posttraumatic stress disorder (PTSD) in adults. To achieve this, she 1) updated Cochrane reviews of pharmacotherapy for SAD and PTSD, 2) conducted a qualitative systematic review of network meta-analyses for pharmacological treatment of common mental disorders, and 3) conducted a network meta-analysis for SAD and PTSD and compared findings to standard pairwise meta-analytic methods. She found that systematic reviews and meta-analytic approaches offer novel and alternative ways of synthesising, presenting and reporting data in comparison to individual randomised controlled trials (RCTs). The evidence across aims suggest that serotonin reuptake inhibitors (SSRIs) are effective in the treatment and reduction of SAD and PTSD and that estimates are similar across the different approaches to synthesising data and across the different patient groups. The quality of reporting of individual RCTs remain low, however.

Supervisor: Dr J Ipser (Psychiatry, UCT)

Co-supervisors: Prof. Dan J Stein (Psychiatry and Mental Health); Professor A Cipriani (Psychiatry, Oxford University)

Emily Claire Garman

Thesis Title: Trajectories of perinatal depressive symptoms in South Africa

Emily Garman holds a BSc in Psychology from the University of Reading and an MSc in Developmental Psychopathology from Durham University in England. She joined UCT as a research officer in 2011 and began studying towards her PhD in 2015.

Emily Garman's thesis reports the presence of different trajectories of depressive symptoms during pregnancy and the postpartum period. She first reviewed the international literature and then conducted her research among two different populations of perinatal women in Khayelitsha, Cape Town. Similar trajectories were identified among perinatal women in Khayelitsha compared to studies in high-income countries, each with specific sets of risk factors and distinct associations with severity of suicidal risk and child outcomes over time. She reports that women showing a course of chronically severe symptoms, systematically reported in all studies, can be differentiated during pregnancy from those who show a natural remission of symptoms, based on health and psychosocial characteristics. Given the limited mental health resources available at primary care level in South Africa, her thesis contributes to developing efficient methods to identify, refer and manage women who may need more intensive mental health care.

Supervisor: Professor C Lund (Psychiatry and Mental Health)

Co-supervisor: A/Professor M Schneider (Psychiatry and Mental Health)

Sheri-Michelle Koopowitz

Thesis Title: *Neuroimaging and neurocognitive assessment of PTSD and MDD in a South African community setting*

Sheri Koopowitz holds a BA and MSocSc degree in Research Psychology from UCT. She joined the university's Department of Psychiatry and Mental Health as a research assistant in 2012 and started her PhD studies in 2013.

Sheri Koopowitz's thesis focuses on the neurocognitive and neuroimaging associations of Posttraumatic Stress Disorder (PTSD), Major Depressive Disorder (MDD), and PTSD with comorbid MDD in a sample of female participants from the Drakenstein Child Health Study cohort. Her work primarily investigates whether PTSD with comorbid MDD leads to greater impairments and dysfunction, compared to PTSD or MDD alone. The findings from her thesis highlight that PTSD with comorbid MDD presents with distinct neurocognitive impairments compared to these conditions on their own. In addition, she reveals the presence of both amplified and distinct abnormalities in functional connectivity of cognitive control brain networks in these participants, as well as structural abnormalities in brain regions that overlap with these networks. This work paves the way for future neuroimaging research and may guide the development of interventions in a difficult to treatment patient population.

Supervisor: Dr J Ipser (Psychiatry and Mental Health)

Co-supervisor: Professor D Stein (Psychiatry and Mental Health)

Hendrik Sebastian Sebastian Temmingh
Thesis Title: *Epidemiology, diagnosis and aspects of treatment in persons with serious mental illness and co-occurring substance use disorders*

Hendrik Temmingh holds a MBChB, an MMed in Psychiatry and is a Fellow of the South African College of Psychiatrists (FCPsych). He obtained an MPH in Clinical Research from UCT and he works as a consultant psychiatrist

at Valkenberg Hospital.

Hendrik Temmingh's thesis reports on the clinical characteristics, diagnosis and pharmacotherapy in patients with both a serious mental illness (SMI) and co-occurring substance use disorders (SUDs), or "dual diagnosis". He sets out to demonstrate that SUDs co-occur in as many as 50% of patients with SMI. He then finds significant associations with SUDs and male sex, younger age, post-traumatic stress, anxiety, depression and risky behaviour such as suicidality and criminal involvement. He then demonstrates that two screening tests, the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and the Severity of Dependence Scales (SDS), are valid, brief and accurate in identifying SUDs. He goes on to show that patients with co-occurring methamphetamine use disorders are significantly more likely to experience antipsychotic-induced movement disorders. Finally, in a systematic review of randomised trials he investigates the hypothesis that the second-generation antipsychotic, risperidone is superior to other antipsychotics in the dually diagnosed.

Supervisor: Professor DJ Stein (Psychiatry and Mental Health)

Co-supervisor: A/Professor N Siegfried (Psychiatry and Mental Health)

In Public Health:

Elizabeth Margaret Jean Gwyther
Thesis Title: *How is palliative care part of the right to health? The South African evidence*

Elizabeth Gwyther holds an MBChB (UCT), FCFP (Colleges of Medicine) and an MSc Palliative medicine (University of Cardiff). She joined UCT in 2000 to found postgraduate programmes in Palliative Medicine training more than 330 health professionals in Palliative Care across Africa. She is currently CEO of Hospice Palliative Care Association South Africa.

Elizabeth Gwyther's thesis explores how Palliative Care forms part of the right to health in South Africa. She describes a substantial need for

Palliative Care services in South Africa which is largely underestimated by traditional needs assessment methods. Even with these underestimations, she demonstrates a sizeable treatment gap in access to Palliative Care. Almost all palliative care is delivered through the NGO sector. This situation illustrates a failure on the part of the state to fulfil its rights obligation to ensure availability and accessibility of palliative care. However, once patients access palliative care, her research found generally good quality of care, manifested in overall improvements in pain scores amongst different cohorts of patients. Nevertheless, limited integration of palliative care into primary care and limited training of health professionals in palliative care skills remain obstacles to realising access to quality palliative care as part of the right to health.

Supervisor: Professor L London (Public Health and Family Medicine)

Co-supervisor: Dr M Heap (Public Health and Family Medicine)

Hanne Jensen Haricharan

Thesis Title: *Health committees in South Africa: the influence of power on invited participation in policy and practice*

Hanne Haricharan holds master's degrees in Danish, Journalism and Social Anthropology from the Universities of Aarhus, Columbia and Cape Town. She joined the School of Public Health and Family Medicine at UCT in 2008, leading research into community participation in health. She won a prestigious Wellcome Trust Studentship in 2015.

Health Committees are structures mandated by national legislation to facilitate community participation in the South African health system. Hanne Haricharan's thesis explores how power operates in these committees. Using two health committees in the Western Cape as case studies, she demonstrated how constraining forms of power impacted on participation. She identified two forms of power necessary for effective participation: countervailing power (an external form of power necessary to counter-balance

unequal power relations) and enabling power (necessary for exercising agency). While legislation provided committees with countervailing power, the system of ministerial appointment of committee members ensured that the health service retained control over who participates and what powers they exercise. The thesis argues that a human rights approach, which positions committees as claim-makers, could provide a framework for meaningful invited participation. Hanne Haricharan demonstrates that the co-existence of invited and invented participation spaces can provide communities with multiple avenues for influence.

Supervisor: A/Professor C Colvin (Public Health and Family Medicine)
Co-supervisor: Professor L London (Public Health and Family Medicine)

Lorna Lynne Olckers
Thesis Title: *Professionalism in medicine in South Africa - a focus on medical students and their educators*

Lorna Olckers is a social worker and educator. She joined the Faculty of Health Sciences at UCT in 1996 as a tutor and facilitator before being promoted to lecturer, senior lecturer, and convenor of the faculty's first year multi-professional courses. She completed her MPhil in 2006, and is currently exploring new adventures.

Lorna Olckers' thesis focuses on the topical, but "slippery" notion of professionalism in medicine. Focus groups and interviews were conducted with medical students studying at UCT, interns who graduated from UCT, and UCT educators in order to explore their perceptions and experiences of professionalism. Results were considered against physician and philosopher Dr Edmund Pellegrino's virtue-based understanding of professionalism. The results reflected a multi-faceted view of professionalism as a combination of values, knowledge and skills, behaviour, and responsibilities centred around a core of trust between doctors and patients. This understanding was informed by students' emerging identity, experiences of power and hierarchy, and contextual

realities of commercialisation, the internet and social media within the South African context. What became clear is that professionalism in medicine is a complex concept that must be understood within a wider experience of being and becoming a doctor.

Supervisor: Dr C Draper (Human Biology)
Co-supervisor: Professor S Reid (Primary Health Care Directorate)

Tamsin Kate Phillips
Thesis Title: *Understanding women's engagement in HIV care after initiating antiretroviral therapy during pregnancy in South Africa*

Tamsin Phillips holds an MPH degree in Epidemiology and Biostatistics from UCT. She is currently a Research Officer working on maternal and child health and HIV projects in the university's Division of Epidemiology and Biostatistics.

Tamsin Phillips' thesis investigates barriers to engagement in HIV care with specific considerations for pregnant and postpartum women. It also explores novel approaches to measuring engagement in care after antiretroviral therapy (ART) initiation during pregnancy in South Africa. Tamsin Phillips combined data collected from a large primary care cohort of women who initiated ART in pregnancy in Gugulethu, Cape Town, with routinely collected electronic health data for the same cohort. She used these data to evaluate the level of medication adherence and retention in HIV services during and after pregnancy. She explored the impact of patient-reported ART side effects, mobility and routine care transfers on engagement in HIV care and presents in this thesis recommendations for the measurement and support of ART adherence and retention among pregnant and postpartum women living with HIV.

Supervisor: Professor L Myer (Public Health and Family Medicine)
Co-supervisor: A/Professor C Orrell (Medicine)

Ingrid Jeanne Van Der Heijden
Thesis Title: *Women with disabilities' experiences of gender-based violence in Cape Town, South Africa*

Ingrid van der Heijden holds a master's degree in Social Anthropology from the University of Stellenbosch. Since 2012, she has been a senior scientist at the Gender and Health Research Unit of the South African Medical Research Council. In 2013, she joined the School of Public Health at UCT for her PhD studies.

Ingrid van der Heijden's thesis focuses on women with disabilities' experiences of gender-based violence in Cape Town, South Africa. She interviewed thirty women with disabilities, and nineteen disability and gender-based violence services providers. Her findings reveal that women with disabilities experience added layers of violence. This she attributes to disability-related stigma and 'ableist' gender norms that prevent women with disabilities from having healthy and safe intimate partnerships. Her thesis further highlights how women with disabilities face unique barriers when accessing gender-based violence services, perpetuating their isolation and vulnerability to violence. Her thesis acknowledges women's resilience, despite their added vulnerability. Ingrid van der Heijden's thesis proposes that violence prevention efforts build on women with disabilities' resilience, as well as address the psychosocial and environmental barriers that put them at risk. It further proposes ethical recommendations for future disability-inclusive gender-based violence research.

Supervisor: Professor J Harries (Public Health and Family Medicine)
Co-supervisor: Professor N Abrahams (Gender and Health Research Unit, South African Medical Research Council)

4. FACULTY OF HUMANITIES

Acting Dean:

Associate Professor S. Kessi

DEGREE OF DOCTOR OF PHILOSOPHY

In African Languages and Literature:

†Sikhumbuzo Manwood Skhura Yani

Thesis title: *IsiXhosa interpretations of the Nongqawuse saga: oral narratives and theatrical performances of the Nongqawuse story*

Sikhumbuzo Yani completed his master's in Drama Education at the University of the Witwatersrand. He was appointed lecturer in the School of Education at the University of KwaZulu-Natal, where he received a Best Lecturer award for teaching excellence in Drama in Education. Mr Yani sadly passed away in November 2018, soon after submitting his thesis.

Sikhumbuzo Yani's thesis is centred on the creative and linguistic interpretations (in English and isiXhosa) of the Nongqawuse prophecy and the cattle-killing of 1856-1857. By examining a range of historical, cultural and anthropological sources, the study foregrounds traditional African theatre elements as well as language as being important to a fresh understanding and appreciation of the Nongqawuse story. Using textual analysis as a methodological choice, the study analyses H.I.E Dhlomo's *The Girl Who Killed to Save*, Xolani Mkonko's *Nongqawuse: a dissertation of true lies* and Brett Bailey's *The Prophet* to locate the linguistic construct of the plays as well as their theatrical and performative aesthetics. The study contributes to the field of African languages by critiquing how these dramatic works, which focus on Nongqawuse's prophecy, are inspired by Xhosa genres of orature and storytelling but fail to harness the creative power of isiXhosa by too readily resorting to English.

Supervisor: Dr T Dowling (School of Languages and Literatures: African Languages and Literatures)

Co-supervisor: Dr M Motinyane (School of Languages and Literatures: African Languages and Literatures)

In African Studies:

Erica de Greef

Thesis Title: *Sartorial Disruption: an investigation of the histories, dispositions, and related practices of the dress/fashion collections of Iziko Museums as a means to reimagine and reframe the sartorial in the museum*

Erica de Greef holds an MA in Fine Arts from the University of Witwatersrand. Her PhD research was undertaken jointly in African Studies and the Archive and Public Culture research initiative.

Erica de Greef's thesis investigates how, in museums, black South Africans were ethnographically cast as tribal subjects, and their clothing was treated as timelessly traditional or, more recently, hybrid 'dress.' Conversely, white South Africans were historically cast as bearers of modernity, and their clothing was considered 'fashion.' She focuses on current stasis in the collection, classification and curation of South African dress/fashion objects, using a case study of three, previously-separate museum collections that, since a merger in 1999, form part of the Iziko Museums Social History Collections. She shows that while the contested binaries of tradition and modernity are often challenged, their effects continue to constrain contemporary self-fashioning, and Iziko Museums' capacities to integrate and 'decolonise' their collections. The thesis identifies the location and extent of these congealed categories and the disciplinary assumptions at work, and effects a series of breaches, both practical and conceptual to reframe and reimagine the sartorial in the museum.

Supervisor: Professor C Hamilton

(History)

Co-supervisor: Associate Professor N Shepherd (African Studies)

In Anthropology:

*Roger Dale Horn

Thesis Title: *Memories, material culture, and methodology: Employing multiple filmic formats, forms, and informal archives in anthropological research among Zimbabwean migrant women*

Roger Horn holds a BA in Social Theory, Structure, and Change and a MA degree in Visual and Media Anthropology. He joined the Anthropology department at UCT in 2017 for his PhD studies. Prior to pursuing his doctorate, Roger worked for nearly two decades in the film industry.

Roger Horn's thesis focuses on the memories and material culture of Zimbabwean migrant women residing in Cape Town, South Africa. In order to provide an additional layer of understanding related to the daily experiences of these women the written thesis is accompanied by four unconventional films that diverge from the mainstream medias often misrepresentation of migration. Using traditional anthropological research methods, informal historical archives such as found home movies from the 1960s-1970s, contemporary videos from the internet, and footage recorded by Roger using multiple digital and film formats his films are presented as fractured narratives that utilise multiple audio and visual techniques such as split-screen presentation and asynchronous sound. Through the presentation of multiple stories that cover life not only in South Africa, but also in Zimbabwe during return visits allows for a better understanding of the multi-dimensional aspects of migrant life that is often overlooked and underrepresented.

Supervisor: A/Professor S Levine (Anthropology)

In English Language and Literature:

Brittani Reniece Smit

Thesis Title: *Whiteness as currency: an analysis of colorism in contemporary fiction of the Anglophone Caribbean and the Cape*

Brittani Smit completed her bachelor's degree in English literature with honours at Trinity College in Hartford, Connecticut, and her MA in Literature and Modernity at UCT. She began full time study towards her PhD in 2014.

Brittani Smit's thesis is a comparative study of the literary representation of class and colour-based discrimination in contemporary literature of the Anglophone Caribbean and the Cape. She investigates the complex interplay between race, colour, class and gender and the pursuit of whiteness in the literature of two contexts characterised by colorist hierarchies in the shadow of the British Empire. In her research, she focuses specifically on the role of colourism, which is discrimination based on skin tone, and the assimilation of British norms. Her work focuses on texts written by and about women and foregrounds gendered experiences of race in the Cape and Anglophone Caribbean, highlighting the unique experiences of women of colour in relation to colorism and intersectional class-based discrimination in post-colonial and post-apartheid spaces.

Supervisor: Dr K Mkhize (African Languages, Witwatersrand University)

Co-supervisor: Dr C Ouma (English Language and Literature)

In Environmental and Geographical Studies:

Kim Janette Gurney

Thesis Title: *The mattering of African contemporary art: Value and valuation from the studio to the collection*

Kim Gurney is a Next Generation Researcher in the Centre for Humanities Research at the University of the Western Cape. Two recently published books represent her interdisciplinary work: *The Art of Public Space: Curating and Re-imagining the Ephemeral City* and *August House is Dead, Long*

Live August House! The Story of a Johannesburg Atelier.

Kim Gurney's thesis explores contemporary art as a vector of value by tracking how artworks become matter in the studio, and how they come to matter beyond the studio door. The first case study is a Johannesburg building comprising artists' studios, focusing on practice and process. It finds artistic thinking in response to uncertainty, comprising self-organised collectives and nested capacity. The second case study is a private collection of African contemporary art, managed from Cape Town, which begins life as an art fund. The conclusion is a different kind of collectivity to navigate uncertainty through structural thinking, or formal strategies. Taken together, it becomes apparent that contemporary art is itself a way to take a measure of the world, as it moves from context to context, while public interest is a central characteristic from which other kinds of valuations flow. Finally, these findings engage ecological thinking to propose more resilient artworld forms that apprehend contemporary art as part of an undercommons.

Supervisor: Professor Gordon Pirie (Geography)

Percy Munyaradzi Toriro

Thesis Title: *Food production, processing and retailing through the lens of spatial planning legislation and regulations in Zimbabwe: evidence from Epworth*

Percy Toriro holds an honours in Regional and Urban Planning and a master's in Environmental Planning and Policy from the University of Zimbabwe. Having worked in urban planning and food security in Zimbabwe and the region, he joined UCT's Environmental and Geographical Sciences Department in 2015 for his PhD.

Percy Toriro's thesis focuses on how Zimbabwe's spatial planning regulatory framework affects urban food systems in that country. He examines planning laws, plans and policies as well as planning professionals' attitudes and interpretations. He maps retail food

outlets and grinding mills to check for their compliance with the planning regulatory framework. He finds that most retail food outlets and grinding mills operate outside the regulatory provisions. He also finds planning officials' attitudes towards these food sources to be negative, despite their saying that how those sources operate has no effect on food systems. He attributes the negativity to two factors: planners' modernist values which, he argues, force them to see only what they accept and were trained to embrace; and the resulting cognitive dissonance they experience between those values and on-the-ground practices. He concludes that planning regulations in much of the global South are inappropriate to people's lived experiences.

Supervisor: Dr J Battersby (Environmental and Geographical Science)

Co-supervisor: Professor S Parnell (Environmental and Geographical Science)

In Film Studies:

Kristina Graour

Thesis Title: *Story, In Progress: Considering New Methods for the Analysis of Ongoing Television Series*

Kristina Graour holds an MA in Screenwriting from UCT, a BA(Hons) in Film and Television Theory, and a BA degree with majors in both English Literature and Film Production.

Kristina Graour's doctoral thesis emerges from her experiences studying television screenwriting. Her work addresses the difficulties of thinking about narrative structure for the medium of television. Television stories are typically designed to be long-running. These narratives are also unpredictable as they need to accommodate changing demands of the television industry and unexpected events such as an actor leaving the show. Kristina Graour's dissertation develops a set of analytical tools for examining narrative structures which are designed to continue, to expand and to accommodate contingencies. She introduces two analytical terms for

the study of serial narrative: “coherent expansion” and “serial narrative dynamics”. Using these critical concepts, she explains how ongoing television series continually generate plot through the productive tension between characters and communities. This narratological work provides a useful framework for the analysis of a wide range of television programmes across generic boundaries.

Supervisor: Dr A Smit (Film and Media Studies)

In Fine Art:

Tebogo George Mahashe

Thesis Title: *MaBareBare, an imagining of khelobedu expressed in the present*

Tebogo George Mahashe holds a BTech and an MA in Fine Art. Whilst registered in the Michaelis School of Fine Art, he has been supported by the Archive and Public Culture Research Initiative and the Centre for Curating the Archive, both at UCT.

George Mahashe’s thesis is precipitated by research into an 1897 trip to Berlin by a group of Balobedu people, accompanied by the missionary Fritz Reuter, and known within the contemporary community as The Berliners. The thesis develops into a subjective expression of khelobedu – itself a central concept in the thesis, and one that resists easy translation simply as the culture of people known as Balobedu. The thesis thereby offers a critique of conventional and anthropological modes of representing African people. It also critiques both the university and museums of ethnography as spaces in which, even though change is being encouraged, coloniality remains. George Mahashe’s focus on the subjective is a key part of the rationale of his thesis, allying creative practice to decolonising imperatives. He thus positions his work as a thesis with potential to shift thinking about scholarship in the academy in the post #Rhodes-Must-Fall era.

Supervisor: Professor C Hamilton (Historical Studies)

Co-supervisor: Professor P Skotnes (Michaelis School of Fine Art)

In Historical Studies:

Nompilo Cindy Ndlovu

Thesis Title: *The Gukurahundi “Genocide”: Memory and Justice in Independent Zimbabwe*

Nompilo Ndlovu studied at UCT where she obtained all her prior qualifications in the Faculty of Humanities, namely a BSocSc majoring in Gender; as well as a BSocSc(Hons), and MSocSc - with the latter two obtained from the Department of Social Development.

Nompilo Ndlovu’s oral history research highlights the state denials and produced silences surrounding the Gukurahundi occurrences in Zimbabwe, between 1982 and 1987. This study thus draws attention to survivors’ narrations amidst ongoing “memory wars” and entrenched silences which have shaped and continue to shape survivors lived realities and perceptions in the aftermath. In this regard, the study focuses on the intersectionality between memory and silence; gender and memory; spatialities of memory; as well as intergenerational memory. Another important aspect which becomes a thread throughout the research is the connection between memory and language(s) or lexicon. Lastly the study highlights the memory and justice nexus, with reference to the various ways people attempt to survive post-conflict and amidst the complexities associated with the atrocity. The research offers recommendations for post-conflict dialogue and justice initiatives as a way forward.

Supervisor: A/Professor S Field

(Historical Studies)

Co-supervisor: Dr Maanda Mulaudzi (Historical Studies)

In Media Studies:

Tariro Ndawana

Thesis Title: *‘The whole nation on one station’? National FM as a case study of radio for indigenous small linguistic communities in Zimbabwe*

Tariro Ndawana holds a Dip Ed and BA from UZ, Post-Grad Diploma and MSc degree in Media and Society Studies from Midlands State University, Zimbabwe. She joined the UCT Centre

for Film Studies in 2013 for her PhD studies. Before joining UCT, she taught Media Studies at MSU in Zimbabwe.

Tariro Ndawana’s thesis focuses on the extent to which National FM, a Public Service Broadcasting radio station in Zimbabwe represents local minority languages. Local minority language speakers have been marginalized in many spheres of life. She uses institutional ethnography to investigate the processes of radio production at the station. The study analyses how ownership and control patterns of the organization as well as the political situation of the country leads to further marginalization of local minority people. Her study goes further to analyse radio content for selected languages. The study reveals that the radio station does not fully represent the small indigenous languages as it gives more airplay to the main vernacular languages. The minority language speakers are not actively involved in the production of radio content. There should be language based community radio stations that would cater for all the minority language speakers.

Supervisor: Professor W Chuma

(Film and Media Studies)

Co-Supervisor: A/Professor T Bosch (Film and Media Studies)

In Music:

Justin Munro Carter

Thesis Title: *The chamber music of Hendrik Hofmeyr: an investigation and stylistic analysis of selected works*

Justin Carter holds a BMus, a BMusHons and an MMus from UCT, all awarded with distinction. One of the most distinguished clarinetists living in South Africa today, he began his PhD studies in 2015.

Justin Carter’s thesis investigates the chamber music of Hendrik Hofmeyr, probably the most performed and commissioned composer in South Africa today. His investigation includes detailed analyses of all Hofmeyr’s major chamber compositions, works that form an integral part of the composer’s musical output. Carter’s thesis provides an

important musicological contribution to the composer's work. It complements the creative component of the study. The creative component comprised four chamber music recitals which featured a number of Hofmeyr's works, including one composed specifically for Carter, the Quintet for Clarinet and Strings, and which Carter premiered during his final recital.

Supervisor: Emeritus Professor J May (South African College of Music)

In Psychology:

Michelle Henry

Thesis Title: *Associations between sleep architecture, cortisol concentrations, cognitive performance, and quality of life in patients with Addison's disease*

Michelle Henry holds bachelor's, honours and master's degrees from UCT. Her doctoral work emerged from her interest in cognitive neuroscience (specifically, the effects of stress hormones on brain structure and function).

Michelle Henry's thesis focuses on relationships between sleep disruption, stress hormones, memory functioning, and quality of life. It is based on a series of four studies that used a sample of patients with a rare medical condition (Addison's disease) and healthy individuals to understand such relationships. Her goal in conducting those studies was to add further knowledge regarding the role of healthy sleep in ensuring cognitive well-being, and showing that sleep disruption has predictable effects on memory performance via its effects on brain chemistry. Her findings show that disrupted sleep (measured via both self-report and polysomnography) is linked to cognitive impairment, and that changes in concentrations of the stress hormone cortisol may be related to sleep and memory problems in patients with Addison's disease. Her results suggest that future initiatives aimed at improving patients' cognition and overall quality of life should prioritise optimising sleep.

Supervisor: Associate Professor KGF Thomas (Psychology)

Co-supervisor: Associate Professor IL Ross (Medicine)

In Religious Studies:

Adrian Marshall Coates

Thesis Title: *Everyday aesthetic existence and discipleship: exploring the connections between aesthetics, faith and ethics in being human and becoming Christian*

Adrian Coates has a BA from UNISA and an MA in Theological Studies from Regent College in Vancouver, Canada. While working on his PhD, he has been lecturing theology at Cornerstone Institute, where he has been a member of the academic staff since 2014.

In his thesis, Adrian Coates explores Søren Kierkegaard's notion of "aesthetic existence," or sensory immediacy, investigating the contribution of embodied and affective experience, as being "in the moment," to Christian faith development and ethical formation. He frames the correlation between aesthetic existence and discipleship through Dietrich Bonhoeffer's call for a recovery of aesthetic existence in the life of the church. Drawing from Bonhoeffer's theology, he shows that aesthetic existence is a valid and necessary expression of imitating the humanity of Christ. Further, by integrating findings from neuropsychology through the work of Iain McGilchrist, he finds that sensory immediacy is fundamental to being human, contributing to formation prior to ratiocination. Consequently, in reference to liturgical theology, he argues that the expressive and formative role that aesthetic existence plays in becoming Christian is best understood by extending liturgy beyond the limits of church buildings into the everyday life of the world.

Supervisor: Emeritus Professor J de Gruchy (Religious Studies)

Fednand Manjewa M'Bwangi

Thesis Title: *Ideology and righteousness in Matthew 5.20: a study in identity politics from the Sermon on the Mount*

Fednand Manjewa M'bwangi is a Priest in the Anglian Church, Diocese of Mombasa and lecturer in the

Department of Religion and Philosophy at Pwani, University, Kilifi, Kenya. He completed his MA (Religious Studies) at Trinity School for Ministry, Ambridge, Pennsylvania, USA, before registering for his PhD at UCT in 2015.

Manjewa M'bwangi's thesis examines the Gospel of Matthew's use of the concept of righteousness for ideological purposes and then employs this concept in the analysis of the identity politics embedded in Jesus's Sermon on the Mount (Matthew 5-7). Using Vernon K. Robbins's socio-rhetorical interpretation, which he supplements with his own Social Identity Political Theory, he investigates the relations of the Matthean community with the Roman empire, Diaspora Judaism and other communities of the early Jesus Movement in Syrian Antioch, where the Gospel of Matthew originated in the late first century CE. This approach enables him to defend his argument that Matthew 5.20 employs the concept of righteousness to contest, accommodate and mimic identity formation in the Roman empire, Diaspora Judaism and the Jesus Movement, respectively. These findings have relevance for understanding and addressing identity politics in the contemporary church in Africa.

Supervisor: Emeritus A/Professor C Wanamaker (Religious Studies)

In Social Anthropology:

Ingrid Brudvig

Thesis Title: *Im(mobility), digital technologies and transnational spaces of belonging: an ethnographic study of Somali migrants in Cape Town*

Ingrid Brudvig holds a BA in Anthropology and International Relations from Connecticut College and an MA in Social Anthropology from UCT. She has also worked in the non-profit sector on gender and digital equality research and advocacy.

Ingrid Brudvig's thesis focuses on the intersection of im(mobility), physical and virtual space and new configurations of belonging in a digital world, as experienced by Somali migrants in Cape Town. It investigates

the gendered politics and ethics of being and belonging in a world of mobility and migration where digital technologies have become significant to social organisation and sociality, both within and across borders. The research presented probes the reasons why policies and technologies that were expected to create more fluid movement and more open societies have been met with the hardening of national borders, and a parallel rise in global trends towards anti-immigration, control of identities and fear of difference, which have manifested in South African society. This thesis concludes that a combination of legal frameworks, public infrastructures and cultural factors exert a strong influence on Somali migrants' mobility and belonging in South Africa.

Supervisor: Professor FB Nyamnjoh
(Social Anthropology)

In Sociology:

Jean-Paul Solomon

Thesis title: *Living side-by-side? An analysis of the changing relationship between race, space and class in Cape Town, 1980-2011*

Jean-Paul Solomon completed a National Diploma at the Cape Technikon and a BA through Stellenbosch University before completing BSocSc(Hons) and MSocSc degrees at UCT. He began working towards his PhD in 2015.

Jean-Paul Solomon's thesis reports on the changes in the occupational composition of Cape Town's job market between 1980 and 2011, as well as the racial composition of those occupations and the extent of racial residential segregation in the city. Using data from four censuses, he engages with the debate between proponents of the social polarisation and professionalisation theories, as well as the question of which racial groups have benefitted from these changes. Using a GIS platform he mapped the geographical distribution of the population, with particular attention on the post-apartheid period. Finally, he used two indices, to determine the extent of changes in racial and inter-class segregation. His findings indicate that while Coloureds and Black Africans

have made gains in high-income and middle-income occupations, these groups still experience the higher levels of unemployment than their white counterparts. Additionally, according to his 2011 findings, Cape Town remains starkly racially segregated across numerous occupational classes.

Supervisor: Professor O Crankshaw
(Sociology)

In Spanish:

Katia Patricia De La Cruz Garcia

Thesis Title: *African historical religions and Africana spirituality in Caribbean literature: an analysis of Afro-Caribbean philosophical archetypes in contemporary Caribbean Literature using Ifá philosophy as a signifying system*

Katia de la Cruz García completed a BA Hons at the Universidad del Atlántico in Barranquilla, Colombia, in 2005, and began working on an MA at UCT in 2014, upgrading to PhD in 2016.

Katia de la Cruz García's thesis proposes a culturally centred Trans-Atlantic model for analysing Afro-Caribbean literature, which she creates on the basis of the Nigerian Yoruba Oracle of Ifá and its philosophy. She analyses the presence of Afro-Caribbean philosophical archetypes in Caribbean literature as fundamental elements in the identity formation and racial dynamics of African descendants in the Caribbean. The main focus is on the spiritual component of African historical religions and Africana spirituality. The model is then used to analyse several works of literature demonstrating layers of meaning that cannot be discovered by using European theories of literature or adaptations thereof. This model provides the first Africana philosophy centred model of analysis and interpretation of Afro-Caribbean literatures, which is a major contribution to the field of Latin American literary analysis.

Supervisor: Dr J Corwin (Languages and Literatures)

Co-Supervisor: Associate Professor B Martínez-Ruíz (History of Art)

5. FACULTY OF LAW

Dean: Professor D. Chirwa

DEGREE OF DOCTOR OF PHILOSOPHY

In Commercial Law:

Bram Van Wiele

Thesis Title: *Intellectual property and consumer 3D printing*

Bram Van Wiele obtained his LLB and LLM degrees from the University of Antwerp in Belgium. In 2014, he obtained an additional LLM, specialising in IP Law, from UCT. He also worked as a research assistant at UCT's Intellectual Property Unit.

Bram Van Wiele's thesis focuses on the intellectual property aspects of consumer 3D printing. He investigates how the intellectual property framework can be optimised to promote consumer use of 3D printing technology. In particular, he questions whether it is possible to balance the interests of the various actors within the consumer 3D printing ecosystem. The development of arguments in his thesis is grounded in technological and social premises, determined by the characteristics of the consumer 3D printing ecosystem and the additive manufacturing process, including design creation, dissemination and production. He finds that a balance between the various interests of stakeholders can be struck, subject to complementary actor- and situation specific responses. Notwithstanding differentiated approaches, he proposes minor amendments to the current South African intellectual property framework, supplemented by the clarification concerning the application of intellectual property rights, and the implementation of non-restrictive digital rights management systems.

Supervisor: Associate Professor T Schönwetter (Commercial Law)

In Private Law:

Catherine Louie Van Schalkwyk

Thesis Title: *A legal perspective on the role of municipalities in navigating the relationship between land use planning and mining*

Catherine Louie van Schalkwyk holds an LLB and LLM degree from Stellenbosch University. She practiced as an attorney, notary and conveyancer in Cape Town for seven years before returning to academia in 2015 for doctoral studies at UCT.

Catherine Louie van Schalkwyk's thesis focuses on the relationship between land use planning and mining. The research compares the application procedure to obtain a mining right with municipal land use planning application procedures. It investigates the extent to which these procedures overlap and are duplicated. The aim is to determine how better co-operation between the responsible government authorities can achieve greater alignment of these procedures. The thesis shows how poor intergovernmental relations and processes hamper effective co-operation and collaboration between the Department of Mineral Resources and municipalities. While it is imperative that each government institution retains authority over their respective constitutional powers – the Department of Mineral Resources over mining activities, and municipalities over land use issues – the thesis argues that greater efforts at process alignment or synchronisation are necessary. It offers suggestions for improvement.

Supervisor: Professor H Mostert
(Private Law)

In Public Law:

*Lee Swales

Thesis Title: *An analysis of the regulatory environment governing electronic evidence in South Africa: suggestions for reform*

Lee Swales holds an LLB from the University of KwaZulu-Natal (UKZN), and an LLM from the University of the Witwatersrand. He is a law lecturer at UKZN, and a practicing attorney

where he specialises in all aspects of technology-related law.

Lee Swales' thesis focuses on the regulation of electronic evidence in South Africa. Technology has developed rapidly over the last three decades, and over the last decade in particular information is regularly transmitted and stored electronically – and only electronically. The use of mobile phones, e-mail, social media, and various electronic messaging services are ubiquitous. However, there are several areas of confusion and inconsistent application in the regulation of electronic evidence in South Africa. As a result, the South African Law Reform Commission has suggested three different methodologies for law reform, and recommends the most aggressive of these options. This research examines these findings, and considers: hearsay electronic evidence; whether a presumption of regularity exists in South Africa; whether admissibility and weight of electronic evidence is appropriately regulated; and finally seeks to critically review the South African Law Reform Commission's findings in relation to electronic evidence. The thesis concludes with suggestions for law reform.

Supervisor: Professor PJ Schwikkard
Co-supervisor: Professor C Ncube

6. FACULTY OF SCIENCE

Dean: Professor M. Ramutsindela

DEGREE OF DOCTOR OF PHILOSOPHY

In Applied Mathematics:

Jade Gesare Abuga

Thesis Title: *Development of an efficient finite volume computational platform for the simulation of complex flows of complex fluids governed by the Rolie-Poly model*

Jade Abuga has a BSc in Mathematics with minors in Physics and Computer Science from the University of Eastern Africa, Baraton. She also has an MSc

in Applied Mathematics from Jomo Kenyatta University of Agriculture and Technology, Kenya.

Jade Abuga's thesis explores the development of a versatile and efficient scientific code for the simulation and analysis of the complex flows of complex fluids. The code employs, as it's numerical methodology, robust finite volume algorithms, and is implemented on the open source OpenFOAM platform. Robust stabilisation techniques are also employed in the numerical code. The utility and reliability of the code is validated against well-known benchmark flow problems for viscoelastic fluids, including the contraction flow and lid driven cavity flow problems. The code is also employed in the shear banded flow computations based either on the concentration dependent shear banded flow of Rolie-Poly fluids as well as on the constitutive model dependent shear banded flow of Giesekus and Johnson-Segalman fluids. In the final stages of the development of this scientific code, open source commercial scientific programming software was released that implements the same ideas as Jade's thesis. Comparisons of the results from Jade Abuga's work against those obtained from the commercial software are in good agreement.

Supervisor: Dr T Chinyoka
(Mathematics and Applied Mathematics)

Emmanuel Dufourq

Thesis Title: *Evolutionary deep learning*

Emmanuel Dufourq holds a BSc(Hons) and MSc in Computer Science from the University of KwaZulu-Natal, South Africa.

Just as Leonardo da Vinci and the Wright brothers studied the flight of birds as inspiration for flying machines, researchers have studied evolution in nature in order to develop evolutionary algorithms to efficiently solve complex optimisation problems. Emmanuel Dufourq's thesis investigates whether evolutionary concepts can improve the performance, speed and convenience of algorithms in various active areas of

machine learning research. The areas include the automatic recognition of sentiments in text (for example social media data), the recognition of emotions in human facial images and the creation of optimal deep neural networks – a technique loosely inspired by the brain and which is currently state-of-the-art in modern advances, such as self-driving cars. Overall the analysis of the proposed methods in this thesis show that evolutionary algorithms are a valuable addition to machine learning: automating, compressing and/or improving results significantly, depending on the desired goal.

Supervisor: Professor B Bassett (Mathematics and Applied Mathematics)

Samantha Jones

Thesis Title: *Modelling credit spreads in an illiquid South African corporate debt market*

Samantha Jones holds a master's degree in Mathematics of Finance from UCT, following her undergraduate degree in Physics and Applied Mathematics and her BSc(Hons) in Theoretical Physics, also from UCT. She has worked in the Finance industry in South Africa as a quantitative analyst, in equity derivatives and fixed income roles, for over 10 years.

Samantha Jones' thesis investigates the difficulty in quantifying credit worth in the South African listed corporate bond market, due to lack of liquidity. With the most liquid bond over a 13 year period found by her to only trade roughly 60% of the time, she demonstrates that corporate credit risk is not represented accurately. She goes on to develop a mathematically grounded model that incorporates exogenous information when estimating and forecasting the credit worth of a bond issuer, to better the current methodology which is plagued by market illiquidity. This model is shown to improve results, in terms of estimation quality and measurement of uncertainty, from the current methodology and it is also shown that it is applicable in markets where there are no liquidity issues.

Supervisor: Dr E Fredericks (Mathematics and Applied Mathematics)

Co-supervisors: Dr H Laurie (Mathematics and Applied Mathematics); Emeritus Professor R Becker (Mathematics and Applied Mathematics); Dr B Dugmore (BNP Paribas)

Teboho Abram Moloi

Thesis Title: *Testing General Relativity with the next generation of cosmological surveys.*

Teboho Moloi holds a BSc in Mathematics and Applied Mathematics from the University of the Free State. He joined UCT for his occasional postgraduate and BSc(Hons) studies as part of the National Astrophysics and Space Science programme, he then moved on to register for a MSc, which was upgraded to a PhD.

Teboho Moloi's thesis concerns the development of new Universe samples on the largest scales that can be used by the Square Kilometer Array telescope. On these scales, massive superclusters of galaxies suck in neighboring satellite galaxies, creating a peculiar flow of galaxies. Studying this flow of galaxies can tell us a lot about the Universe in which we live, a bit like watching fallen leaves in a breeze. It can determine a lot about Dark Energy and Dark Matter, the great physics problems of our age, as well as the nature of gravity, which binds all things together. The problem is that this flow of galaxies is very tough to measure robustly. Teboho Moloi's work was to construct a new technique for measuring this flow using the next generation of telescopes - in particular South Africa's Square Kilometre Array.

Supervisor: Dr J Larena (Mathematics and Applied Mathematics)

Co-supervisor: A/Professor C Clarkson (Mathematics and Applied Mathematics)

Nathaniel Timothy Babakar Moynihan
Thesis Title: *Aspects of amplitudes, gravity & complexity*

Nathan Moynihan holds an MSc degree from King's College London. He joined the Department of Mathematics and Applied Mathematics at UCT for his doctoral work in 2015.

Nathan Moynihan's thesis explores the frontiers of contemporary quantum field theory, paying particular attention to two themes: scattering amplitudes in gravity and quantum entanglement and complexity. In the first, he re-derives Einstein's iconic result of gravitational lensing by a black hole using on shell amplitude methods. He follows this up by re-visiting the vDVZ discontinuity of massive gravity and, using massive amplitudes, provides a clear understanding of the physics that is usually obscured in the formalism of General Relativity. In the sequel, he studies the notion of complexity in quantum field theory, showing that of three common measures of complexity, so-called circuit complexity is the only one able to distinguish between physically distinct states. Finally, he applies these methods to compute, for the first time, complexity in the SSH prototype of a topological insulator.

Supervisor: A/Professor A Weltman (Mathematics and Applied Mathematics)

Co-supervisors: A/Professor J Murugan (Mathematics and Applied Mathematics); Dr J Shock (Mathematics and Applied Mathematics)

*Faraniaina Rasolofoson

Thesis Title: *Convergent finite element approximations for problems of near-incompressible and near-inextensible transversely isotropic linear elasticity*

Faraniaina Rasolofoson holds an MSc degree in Mathematics from Stellenbosch University, through the joint programme with the African Institute for Mathematical Sciences (AIMS).

Faraniaina Rasolofoson's thesis is concerned with determining

approximate solutions, using the finite element method, for the behaviour of transversely isotropic elastic bodies, which are isotropic in a plane normal to a given fibre direction. Of particular interest are the cases of near-incompressibility and near-inextensibility, for which standard approaches are unable to converge to the exact solution. This is known as locking behaviour. To overcome this undesirable behaviour, Faraniaina Rasolofson proposes two alternative approaches. In the first approach, the standard formulation is modified by under-integrating the problematic terms. The second uses the discontinuous Galerkin (DG) method with under-integration of the problematic edge-terms. Both approaches are shown to lead to uniform convergence, as is illustrated through a number of numerical simulations. This is the first work that successfully addresses fundamental questions of convergent approximations for this class of anisotropic materials.

Supervisor: Professor BD Reddy (Mathematics and Applied Mathematics)

In Archaeology:

Tessa Jane Campbell
Thesis Title: *Investigating the emergence and spread of tuberculosis in South Africa*

Tessa Campbell holds a BSc in Archaeology and Genetics, and a BSc(Med)(Hons) in Human Genetics from UCT.

Tessa Campbell's thesis aims to understand the emergence and spread of tuberculosis in South Africa through an investigation of the Holocene and historical bioarchaeological record and ancient DNA analyses, supplemented by the historical literature. Descriptive and demographic data were collected for 2,321 individuals. Of these, only twelve cases of possible skeletal tuberculosis were identified. All are likely from the colonial period, though two predate European contact, and may suggest a link with East African trade activity. Ancient DNA detection of the bacterium responsible for the disease using

quantitative PCR was successful in three cases; this is the first study to report the successful detection of ancient pathogen DNA in South Africa. Although phylogenetic studies have indicated an African origin for the disease, this study does not support the presence of pre-colonial tuberculosis in South Africa.

Supervisor: Professor RR Ackermann (Archaeology)

Co-supervisor: Professor AC Stone (Human Evolution and Social Change, Arizona State University)

Pascall Taruvunga

Thesis Title: *Stakeholders, conservation and socio-economic development: the case of Mapungubwe Cultural Landscape World Heritage Site, South Africa*

Pascall Taruvunga completed his BA, BA(Hons) and MA in Heritage studies from the University of Zimbabwe. Before joining UCT for his doctoral studies, he worked with culture and heritage institutions at national level (Zimbabwe), regional level (South Africa and Kenya), as well supports the implementation of UNESCO Conventions on cultural heritage.

Pascall Taruvunga's thesis reports on the investigation of stakeholder-driven conservation and socio-economic development processes at MCLWHS. He went on to investigate the relationship between the two using the Multiple-Multi-Layered Stakeholder Theory (MMST) which collected the views and opinions of 243 participants at MCLWHS. He explored level of awareness on World Heritage, roles and responsibilities, benefits accruing and reconciling conservation and socio-economic development from multiple perspectives. This allowed him to propose the notion of caring for the well-being of both heritage and society as strategic investment for the future of World Heritage in Africa. Finally, using the findings, he motivates for the adoption of adaptive management approaches, "learning by doing", as opposed to a monolithic adherence to State-Based Management Systems. The findings will be useful in improving

World Heritage governance as a local-global nexus in managing continuity and change as influenced by multiple stakeholders who are the beneficiaries of conservation and socio-economic developments.

Supervisor: Professor S Chirikure (Archaeology)

Co-supervisor: A/Professor W Ndoro (Archaeology)

In Biological Sciences:

Estelle Razafimanantsoa Razanatsoa
Thesis Title: *Impact of human land-use and rainfall variability in tropical dry forests of southwest Madagascar during the late Holocene*

Estelle Razanatsoa holds a BSc in Biology and Plant Ecology from the University of Antananarivo, Madagascar and an MSc in Biodiversity of Tropical Plants from the University Montpellier-II, France. She joined the Plant Conservation Unit at UCT in 2015 for full-time study towards her PhD.

Estelle Razanatsoa's thesis analyses rainfall variability, vegetation dynamics, and past human land-use, in southwestern Madagascar during the late Holocene. She generates rainfall records from stable isotopes in cores from baobab trees and reconstructs vegetation and fire history from fossil pollen, stable isotopes and charcoal in sediment cores. The results show contrasting patterns of resilience to rainfall variability and human land-use. The wetter, more fertile northern site showed a strong response to climate from 450BC to 980AD, with forest expansion and contraction responding to wetter and drier periods. Human impact associated with pastoralism increased from 980AD, and humans heavily impacted the landscape through agriculture from 1900AD. The drier, less fertile southern site, however, was more affected by aridification than human impact. These findings are important in understanding the social-ecological impacts of climate change in Madagascar and in planning effective conservation strategies and sustainable livelihoods for tropical dry forests globally.

Supervisor: A/Professor L Gillson
(Biological Sciences)
Co-supervisors: Dr S Woodborne
(iThemba Labs); Dr M Virah-Sawmy
(University of Humboldt)

*Alexander Samuel Venter
Thesis Title: *Managing herbivory
over space and time: consequences
for vegetation and cattle responses in
African rangelands*

Alexander Venter is interested in how humans can use ecological principles to manage agricultural systems. He obtained an MSc in sustainable agriculture from Stellenbosch University before joining the Department of Biological Sciences at UCT in 2016 for his PhD study.

Alexander Venter's thesis explores how livestock movements can be controlled to best mimic those of their wild counterparts (e.g. wildebeest migrations in the Serengeti) and whether this is even necessary for productive ecosystems. Using satellite imagery and GPS tracking technologies, combined with hands-on farm- and plant-level experimentation, he found that the management of livestock movements had little effect on vegetation growth and farm profitability. Rather, diversifying the type of livestock and adjusting their numbers in response to water and nutrient resources appeared more important. He documented a widespread increase in shrub and tree cover over Africa and found that increasing the density of browsing herbivores (e.g. goats) in combination with fire may prevent shrubs from encroaching on grazing lands. Importantly he concluded that herbivores are key tools at our disposal for managing African rangelands in a changing world.

Supervisor: Professor M Cramer
(Biological Sciences)
Co-supervisor: Dr H-J Hawkins
(Biological Sciences)

Joseph Douglas Mandla White
Thesis Title: *The natural history,
sensory ecology and biogeography
of the seed dispersal of large fruits in
Fynbos*

Joseph White completed his BSc and BSc (Hons) qualifications at UCT, and began full-time study towards his PhD in 2016.

Joseph White's thesis focuses on the natural history, sensory ecology and biogeography of the seed dispersal of large fruits in the Fynbos Biome of South Africa. He uses a range of techniques, including seed trials with camera traps and scent and colour analyses to describe a number of novel mutualistic, as well as antagonistic, interactions between Fynbos seeds and small mammals, birds and dung beetles. Using machine-learning approaches, he then shows that summer drought and fire return interval are the major environmental drivers of serotinous and scatter-hoarded Fynbos plant distributions. His findings have practical conservation implications and have effectively gained major public interest through popular science outreach.

Supervisor: Professor J Midgley
(Biological Sciences)
Co-supervisor: Dr G Bronner
(Biological Sciences)

In Chemistry:
Godwin Akpeko Dziwormu
Thesis title: *Isolation and
characterization of African marine
natural products and repositioning of
the natural product antibiotic fusidic
acid and privileged benzimidazole
scaffold for tuberculosis and malaria*

Godwin Dziwormu obtained his MPhil degree in Organic chemistry from the University of Ghana, Legon. He joined the Department of Chemistry at UCT in 2015 for studies towards his PhD degree.

Godwin Dziwormu's thesis highlights the collaborative efforts of natural products chemistry and medicinal chemistry towards drug discovery. He starts by isolating bioactive chemical compounds from three South African marine organisms, *Laurencia alfredensis*, *Halichondria* sp. and *Hymeniacion* sp. He then goes on to undertake semi-synthetic derivatisations

on the natural product antibiotic fusidic acid in a drug repositioning approach for malaria and tuberculosis. He concludes with investigating the antiplasmodium and antimycobacterial potencies of derivatives of the biologically privileged benzimidazole chemotype to which is appended the side chain found in the marketed antimalarial drug amodiaquine. Godwin Dziwormu's work has identified a few bioactive agents for further exploration as potential malaria and tuberculosis drug leads.

Supervisor: Professor K Chibale
(Chemistry)
Co-supervisor: A/Professor DR Beukes
(School of Pharmacy, University of the
Western Cape)

*Martina Quaretti
Thesis Title: *Growth and chemical
functionalization of SiC nanowires for
biomedical applications in cardiology
and oncology*

Martina Quaretti holds a BA and MA degree in Chemistry from the University of Parma, Italy. She started her PhD in 2015 at IMEM-CNR (Parma), in a bilateral agreement project with UCT, where she worked for six months in 2016.

Martina Quaretti's thesis focuses on the use of silicon carbide nanowires for biomedical application in oncology and cardiology. She investigates thiosemicarbazones as anticancer drugs using silicon carbide nanowires as carriers. She tests in vitro these nanosystems on cancer cells line and discovers that they are very active against solid cancers. She extends her research to design and develop an epicardial patch based on silicon carbide nanowires. She uses these nanowires to restore the natural electrical pulse that is interrupted as a result of a heart attack (myocardial infarction). In vivo tests in rats demonstrate the effectiveness of such nanosystems and reveal promising data.

Supervisor: Professor G Smith
(Chemistry)
Co-supervisors: Dr L Lazzarini
(IMEM-CNR); Dr F Rossi (IMEM-
CNR)

In Environmental & Geographical Science:

Louise Carin Gammage

Thesis Title: *Development of a scenario-based approach for responding to change in fishery systems: a case study in the small-scale fisheries of South Africa's southern Cape*

Louise Gammage holds a BSc in Environmental Management and a BSc (Hons) in Geography from UNISA. She joined the project "Southern Cape Interdisciplinary Fisheries Research" of the SA Research Chair in Marine Ecology and Fisheries at UCT for her MSc studies, which she built upon for her PhD.

Louise Gammage's thesis explores the development of a scenario-based approach to change in marine fishery systems under global change. Small-scale fisheries and the communities they support face a range of challenges brought on by change in their marine social-ecological systems, which undermine their ability to achieve sustainability. Using the small-scale fisheries from the southern Cape as a case study, Louise Gammage's thesis explores how structured decision-making tools can be applied in an interactive and iterative approach with disenfranchised fishers to promote the development of local response strategies to change through learning and capacity building. The approach allows for the reframing of common and pervasive challenges in fisheries at the specific, local scale to the benefit of fishers. The thesis also makes recommendations for addressing scale challenges in support of an ecosystem approach to fisheries management.

Supervisor: A/Professor A Jarre (Biological Sciences)

Co-supervisor: Professor C Mather (Memorial University of Newfoundland, Canada)

Nina Susara Viljoen

Thesis Title: *Participative water demand management as an adaptive response within complex socio-institutional systems: a city of Cape Town case study, South Africa*

Nina Viljoen completed her MSc qualification at the University of South Africa (UNISA) and began full-time study towards her PhD in 2015.

Nina Viljoen's thesis investigated participative water demand management as an adaptive response within a socio-institutional systems approach. Her literature review indicated that the theory available on the subject substantiated the importance of participation as an adaptive response within water demand management. A case study was conducted on the City of Cape Town metropolitan municipality in order to assess the complex interactions between the water management institution and its water users. The results revealed the centrality of interactions between the society and the institution, and the importance of this relationship being considered as one system. The study found that communication strategies need to be adapted to specific water user groups' unique circumstances. The results will inform water demand management strategies and facilitate improvement through a change from the current inflexible implementation approach, to one that aims at securing sustainable water provision that is adapted to flexibility within the face of increasing change and water security threats.

Supervisor: Dr K Winter (Environmental and Geographical Science)

In Geology:

Eugene Winston Bergh

Thesis Title: *Neogene to quaternary foraminifera from the western margin of southern Africa*

Eugene Bergh holds a BSc, a BSc(Hons) and an MSc in Geology from UCT. He started his PhD in 2016 while employed as a curator at the Iziko Museums, Cape Town.

Eugene Bergh's thesis describes the occurrence of microfossil foraminifera, single-celled animals (protists) that live floating in the surface ocean as well as in the bottom sediment, in a series of sediment cores recovered from the shelf offshore Namibia and the slope offshore South Africa. In his study he shows how the species of foraminifera have changed through time and how these changes reflect major changes in the ocean related to productivity, circulation and climate. The age of his samples span from the Neogene (23 million years ago) until the present day, with a particular focus on glacial to interglacial cycles of the last several hundred thousands of years. His study expands our understanding of the distribution and ecology of foraminifera on the continental margin of southern Africa, an area that previously received only cursory investigation. The microfossils preserved on the margin provide the most detailed and complete record we have of how the region evolved over millions of years and Eugene Bergh's PhD work provides a new foundation from which the region's deep history can be explored.

Supervisor: A/Professor JS Compton (Geological Sciences)

Co-supervisors: Dr P Frenzel (University of Jena) and Professor Dr G Schmiedel (University of Hamburg)

Robert Muir

Thesis Title: *Recalibrating the breakup history of SW Gondwana: the first U-Pb chronostratigraphy for the Uitenhage Group, South Africa*

Robert Muir spent his whole university career at UCT. After obtaining his BSc and BSc(Hons) degrees, he began his MSc in Geology in 2015, and upgraded to PhD in 2016 when he acquired some surprising and intriguing preliminary results.

Robert Muir's doctoral research establishes when and how the present-day continental configuration of the Southern Hemisphere came about. By utilizing uranium and lead isotopes within zircon crystals from volcanic super-eruptions, he measured the ages

of previously undated sedimentary rocks in the southern Cape. These sediments formed in depressions between continents, which had just started to move apart, so the oldest rocks signal the onset of the breakup of the supercontinent Gondwana. Furthermore, Robert has also determined that rifting in southwestern Gondwana occurred over a prolonged period and in two stages: ~180 million years ago, when Antarctica, Australia and India separated from Africa and South America; and then again when South America split from Africa ~130 million years ago. Finally, Robert used geochemistry to trace the volcanic eruptions that supplied ash across the then-fragmenting supercontinent to modern-day Patagonia and the Antarctic Peninsula, which were just offshore Cape Town in the Mesozoic.

Supervisor: A/Professor E Bordy
(Geological Sciences)

Buliba Jahaziel Nkere

Thesis Title: Kimberlites, megacrysts and related xenocrysts from southern and central Africa: geochemistry and petrology

Buliba Nkere holds Graduate (BSc) and Licentiate BSc(Hons) degrees in Geology from the Official University of Bukavu, DRC. He joined the Geological Sciences department at UCT in October 2014 for his postgraduate studies.

Buliba Nkere's thesis focuses on the geochemistry and petrogenesis of mantle-derived minerals and kimberlites from southern and central Africa in order to tackle several ongoing controversies in mantle petrology. He compared the geochemistry of group 1 and group 2 kimberlite megacrysts and demonstrated the genetic relationship between megacrysts and their host kimberlites. He used the geochemistry of mantle minerals to highlight the variations in mantle composition and the extent of metasomatism of the lithospheric mantle sampled by kimberlites of the Kasai Craton of central Africa. He determined the first radiometric age for the Tshibwe kimberlite and showed the tectonic implications of this new age

for kimberlite magmatism, lithospheric evolution and the existence of zones of lithospheric weakness in the Kasai craton. He used the geochemistry of central African kimberlites to provide evidence for a marked compositional anomaly in the convecting upper mantle beneath the continents neighboring the southern Atlantic Ocean.

Supervisor: A/Professor PE Janney
(Geological Sciences)

*Simon Schorn

Thesis Title: High-temperature metamorphism in the western Namaqua-Natal Metamorphic Province (South Africa): implications for low-pressure granulite terranes

Simon Schorn holds a BSc cum laude in Geological Science from the University of Padova, Italy, and an MSc in Geology from the University of Graz, Austria. He joined the Department of Geological Sciences at UCT in 2016 for his PhD studies.

Simon Schorn's thesis examines the role of thermal buffering during partial melting in the evolution of high-temperature rocks, as manifested by field examples from the western Namaqua-Natal Metamorphic Province. He uses thermodynamic modelling to quantify the pressure-temperature history and the enthalpy of melting reactions in different rock types, and uranium-lead geochronology to determine the age and duration of metamorphism. He finds that more fertile rocks record lower temperatures than coexisting rocks that were not thermally buffered, and that crustal temperatures in large parts of Namaqualand were modulated and ultimately limited by the intersection of focused melting reactions. He finds that the timing and spatial distribution of metamorphism coincides with areas that experienced emplacement of voluminous granitic magma, suggesting that the magma contributed an additional heat source to drive metamorphism.

Supervisor: A/Professor JFA Diener
(Geological Sciences)

In Mathematics:

Funmilayo Eniola Kazeem

Thesis Title: A measure for the number of commuting subgroups in compact groups

Funmilayo Kazeem holds a BSc(Hons) degree in Mathematics from the University of Ilorin, Nigeria, a MSc in Mathematics at the African Institute for Mathematical Sciences, South Africa and another MSc in Computational Finance at the University of the Western Cape. She joined UCT in 2017 for her PhD studies.

Funmilayo Kazeem reports relations between probability and topology, working on topological groups which are some fundamental structures in mathematics and physics. Her thesis deals with the construction of a probability measure, which is related to the number of commuting subgroups in profinite groups. Further results are obtained for compact groups and she contributes to the theory of the subgroup commutativity degree which represents the probability of finding two commuting subgroups in infinite groups.

Supervisor: Dr F Russo (Mathematics and Applied Mathematics)

Co-supervisor: Professor H-P Kunzi (Mathematics and Applied Mathematics)

In Molecular & Cell Biology:

*Joanne Bentley

Thesis Title: Comparative metabolomic profiling of phenolics in the desiccation-tolerant "resurrection plant" Myrothamnus flabellifolia (Myrothamnaceae) using conventional and green chemistry-based solvent systems

Joanne Bentley began at UCT with a BA degree in Economic History, changing direction to a BSc degree specialising in Environmental and Geographical Sciences. She then completed a BScHons and an MSc in Biological Sciences, focusing on the phylogenetic and evolutionary relationships of "paper daisies".

Joanne Bentley's thesis investigates the metabolic and

phylogenetic variation in a “resurrection plant”—known for its antioxidant and medicinal activity—from across southern Africa. This plant is widely used in cosmetic and pharmaceutical industries, as well as in traditional African medicine, but the variation in its bioactive ingredients from different locations is not known. Using a mass spectrometry-based approach combined with multivariate statistics, she shows that different populations exhibit significant differences in their metabolic compositions, particularly antioxidants. This variation also corroborates the phylogenetic signature of the plants. Several compounds not previously known from this plant are discovered, and “barcodes” for distinguishing the material from different regions are proposed. She also piloted the use of a green chemistry-based extraction technique in this plant that could potentially have wide application in the cosmetic industry. Her work also has implications for the standardisation of the medicinal products from this increasingly popular plant.

Supervisor: Professor JM Farrant (Molecular and Cell Biology)

Co-supervisor: Dr JP Moore (Institute for Wine Biotechnology)

Susan Jennifer Dennis

Thesis Title: *Development of plant-produced African horse sickness virus vaccines*

Susan Dennis holds a BSc in Molecular Biology from Stellenbosch University, BSc(Hons) in Microbiology from UCT, and an MSc in Molecular Biology from the University of Pretoria. She joined the Biopharming Research Unit at UCT in 2015 for PhD studies.

Susan Dennis’s thesis focuses on the development of novel plant-based vaccine candidates against African horse sickness virus (AHSV), which causes a lethal and debilitating disease of equines in sub-Saharan Africa which has the potential for wider global spread. She demonstrated the production in plants of two different serotypes of AHS virus-like particles (VLPs) which exactly mimic the live virus but are

completely safe as they contain no viral genetic material. She showed that vaccination of horses with these VLPs elicits a safe virus-neutralising immune response comparable to that achieved following inoculation with the currently used, but problematic live attenuated AHSV vaccine. She also explored the potential of producing plant-made vaccines that could provide protection against all nine serotypes of the virus. Her findings have very positive implications for the development of a AHSV vaccine that could complement the standard live vaccine mixture, and eventually replace it.

Supervisor: Professor EP Rybicki (Molecular and Cell Biology)

Co-supervisors: A/Professor II Hitzeroth (Molecular and Cell Biology) Dr AE Meyers (Molecular and Cell Biology)

In Ocean & Atmosphere Science:

*Sarah Asdar

Thesis Title: *Climate change impact on ecosystems of Prince Edward Islands: role of oceanic mesoscale processes*

Sarah Asdar holds an MA degree in Physical Oceanography from the University of Brest, France. She began a co-badged PhD in 2015 between UCT and Brest.

Sarah Asdar’s thesis focuses on how the regional scale and local-scale ocean circulation around the Prince Edward Islands (PEIs), located in the Southern Ocean, impact ocean characteristics at the islands. To address these themes, a combination of observations from satellite altimeters, in situ moorings, and regional numerical model simulations are used. Her investigation highlights the local impacts on PEIs of regional frontal position and associated eddies of the Antarctic Circumpolar Current (ACC), as well as of local tides and currents. Then her research focuses on the processes involved in eddy formation around PEIs and how those would change if the meridional position of the ACC fronts were to shift southwards. Her study shows that fronts present a multi-decadal southward trend and evidences a

potential link between the position of the fronts and the intensity of eddy activity in the region of the PEIs.

Supervisor: A/Professor I Ansonge (Oceanography)

Co-supervisors: Dr P Penven (Laboratoire d’Oceanographie Physique et Spatiale, Institute of Research for Development (IRD); Dr J Deshayes (Centre National de la Recherche Scientifique (CNRS)

Bernardino Joao Nhantumbo

Thesis Title: *Drivers of coastal sea level variability along the east and south of South Africa*

Bernardino Nhantumbo holds a 4-year BSc in Meteorology from the Eduardo Mondlane University, Mozambique and an MSc in Ocean and Climate Dynamics from UCT. He continued at UCT in 2015 for his PhD studies in Physical Oceanography, with a fellowship from the Nansen-Tutu Centre. Before joining UCT, he worked for the National Institute of Meteorology in Maputo, Mozambique.

Bernardino Nhantumbo’s thesis focuses on sea level variability along the south and east coasts of southern Africa. After examining tide gauge records at Ports along the coast using sophisticated novel and standard data analysis tools, he goes on to explore the use of satellite derived sea level measurements close to the tide gauges. This gives him the opportunity fill in data gaps in the tide gauge measurements, and to gain a better understanding of both temporal and spatial characteristics of sea level variability. He uses all his regional data to place it in an ocean wide and global context of climate variability.

Supervisor: Professor C Reason (Oceanography)

Co-supervisors: Emeritus Professor F Shillington (Oceanography); Dr B Backeberg (CSIR); Dr. JE Nilsen (NERSC)

In Physics:

Isobel Kolbe

Thesis Title: *pQCD energy loss and
Thermal Field Theory in small systems*

Isobel Kolbé completed her BSc and BSc (Hons) qualifications at the University of Pretoria, before obtaining an MSc. in Theoretical Physics at UCT. She and began full-time study towards her PhD in 2016.

At enormous particle colliders around the world, the nuclei of heavy atoms (such as gold or lead) are accelerated to very near the speed of light and smashed together to produce a form of matter that has not existed in the universe since a microsecond after the Big Bang – the quark-gluon plasma (QGP). The droplets of QGP created in such collisions have different sizes, and previous theoretical models cannot be used for the smallest of these pearls of primordial matter. Isobel Kolbé's thesis extends current understanding to the smallest droplets of QGP ever created and provides a new theoretical framework for future discoveries.

Supervisor: A/Professor W Horowitz
(Physics)

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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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- 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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*Updates can be done on the web – <http://www.uct.ac.za/dad/alumni/update/>
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whether to a public lecture, a leadership forum, your class reunion,
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