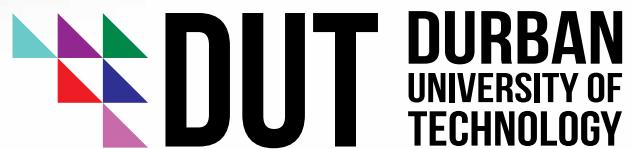




2014/2015
ANNUAL RESEARCH REPORT



FINITE PLANET - SUSTAINABLE SOLUTIONS

FINITE PLANET - SUSTAINABLE SOLUTIONS

The concept of Finite Planet is indicative that we live on a planet which is limited in natural resources. We will eventually use up the natural resources of this planet.

Sustainable Solutions refers to the evolution towards sustainability. This is a learning process in which society has to learn to live better by expending less environmental resources and refining or regenerating their physical and social contexts of life. Sustainable Solutions supports societies to live healthier so that the overall consumption of our natural limited resources are reduced.



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Foreword

by the Vice-Chancellor

Universities as social institutions make multifaceted contributions to society through their activities related to the production of new knowledge and in their contribution to the education of students. These activities have impact locally, nationally and internationally as the world becomes increasingly globalised and localised simultaneously through large sociopolitical and economic forces.

In the last 2 years we have seen many changes at DUT, amongst them the development of a new strategic plan (2015-2019), the development of a research strategy, vast changes in the undergraduate curriculum and in its delivery and the emergence of what we call DUT's Graduate Attributes. Universities all around the world understand the relationship between teaching/learning and research and DUT is no exception.

The new strategic plan speaks extensively of the importance of Engagement as a quintessential characteristic of DUT and it is important that we pay particular attention to how this plays itself out in the research domain. At the very outset we have to consider two very important developments. The first is the prosecution of a set of complex interactions between researchers at DUT and key stakeholders external to the university. The second is the creation of a deliberate set of dynamic interfaces that allow for ongoing linkages and engagements between the University and what would sometimes be referred to as its publics.

The second strategic focus area (or SFA2) is titled Building Research and Innovation for Development. The focus at DUT is very much on strategic, basic and applied research that shapes its emphasis on knowledge generation in order to address the knowledge needs of local and global society and the economy. The emphasis on applied research does not imply the erosion of basic research and we see these as feeding into each other; more so as we increasingly adopt Mode 2-type research which calls for early intersections between basic and applied research. This kind of mixture will require partnerships

of various kinds and the development of basic research capacity in strategic areas. Interdisciplinarity is an essential element of this kind of research and innovation and in particular growing linkages among the natural sciences, engineering, arts and design and the social sciences. The Urban Futures Center at DUT, for example, operates at the confluence of intersecting knowledge domains (see page 21).

It is pleasing to see the growth in the research outputs during the period 2010 – 2014; and in particular, the growth is the number of research publications outputs from 48.45 in 2010 to approximately 140 units in 2014. In terms of total research output units (including postgraduate graduation units) this is an increase from 116.95 units in 2010 to approximately 284.50 in 2014. This rapid growth by about 143% is attributable to the organic growth in the research. It is also recognised that growing the research outputs requires increase the active postgraduate student base and hence the plan to grow our postgraduate student numbers to the point where it is 10% of the total student body by 2025. The postdoctoral programme which contributes significantly to postgraduate training, increased research productivity and internationalisation at home for both our students and researchers, is targeted for growth.

The quality of research produced by the university can be measured through the increase in grantsmanship as well as NRF Ratings. We are aware that both the quantity and quality of research outputs have to be taken into account to create excellence as we grow our research base. Here I wish to congratulate all our staff who have either moved up within their NRF-Ratings or maintained their ratings. Special congratulations go to those who are new comers to the ratings system. DUT is gradually growing the number of B-rated researchers amongst its ranks and this is one of the indicators of the quality of the knowledge being produced.

We have understood that the building of a research ethos and research culture at DUT is a process. One way of doing this was for us to identify a set of strongly performing research groups, units, centres and institutes that resonate with the strategic thrust of the University as an engaged institution. I am pleased to say that after some deliberation, discussions at workshops and consultations, we have identified two sets of centres - those that are already established and functioning at a high level and those that are in a state of development. The University will support these centres and understand that we will constantly be looking to expand the sets (see page 32). 17 have already been identified.

We continue hosting a number of research training opportunities and platforms for staff and students facilitated jointly by the Research and Postgraduate Directorate and various internal and external stake holders. We are particularly grateful for the Research Development Grant for the year (2014/2015), awarded by the Department of Higher Education and Training, which supports a number of initiatives targeted towards increasing staff qualifications at masters and doctoral levels.

Finally, as we move into the next phase of building research and innovation at DUT, we will focus hard on extending the organic growth of the research base which depends on making excellent appointments and getting current staff through their doctorates. The key challenge will be to place the groups, units, centres and institutes on an excellent footing so that they play a grand role in building DUT's research.

And let me thank Professor Sibu Moyo and her team in the Research and Postgraduate Office for an excellent year of activities. We are proud of you. And may I wish the researchers for bringing such excitement and passion to their work and to DUT.

Professor AC Bawa

Vice-Chancellor & Principal:





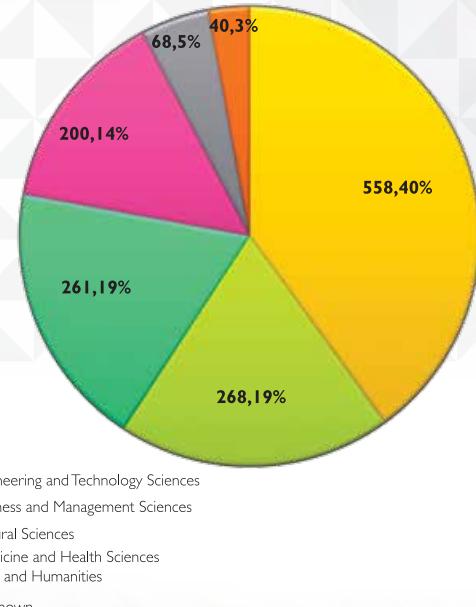
MESSAGE FROM DIRECTOR: RESEARCH & POSTGRADUATE SUPPORT

This report covers the periods 2014 to part of 2015. We have had a significant number of developments during this period and made successes in the key performance areas of publication outputs, postgraduate enrolments and graduations, staff qualifications (at both masters and doctoral levels), grant acquisitions, NRF ratings, postgraduate scholarships, the postdoctoral programme, research training for researchers and postgraduate students and the strengthening of our research focus areas.

In measuring performance, the university is able to invest in quality and use these measurements strategically to identify focus areas, allocate financial resources, as well as promote the institutional achievements to key stakeholders. A report by Thomson Reuters on "finding meaningful performance measures for higher education" (see http://ip-science.thomsonreuters.com/m/pdfs/exec_report_provosts.pdf) lists faculty reputation, grant funding, research output, graduation rates, enrolment growth, patents, rankings, research expenditure as well as faculty salaries as some of the useful measures. This is because higher education institutions need to respond and comply with government mandates and compete for both the best researchers and students in a global context. These indicators are in line with most of those used in reports by the Department of Higher Education and Training (DHET) in South Africa. Generally our university has experienced growth in all areas, as indicated through its performance over the period 2014 and 2015.

I would like to thank faculty, our postgraduate students, researchers and all our professional staff involved in supporting research and postgraduate work across the University for contributing to our progress. I am also appreciative to the finance and procurement department, which responds to the ever changing environment to ensure that our researchers and postgraduate students are able to access financial resources and procure research materials efficiently. Finally, the role of the Library in keeping up with the information age, through their work providing information and training for electronic and digital research skills, is to be applauded.

Article units by science domain at DUT (2005 – 2014)



Professor S Moyo

Director
Research & Postgraduate Support

InCites Report 2005 to 2015 showing DUT-SA collaborations

(By S Moyo – October 2015)

For this period DUT published 675 records on the Web of Science with a category normalized citation impact of 0.69. Over the period 2005 to 2015, 58 % of the documents were cited 3431 times. The university authors collaborated with 17 institutions which included Higher Education Institutions (HEIs), Science Councils and iThemba LABS. The information below shows the name of the institution collaborated with and the percentage of documents that were cited from the collaboration (Thomson Reuters, 2015).

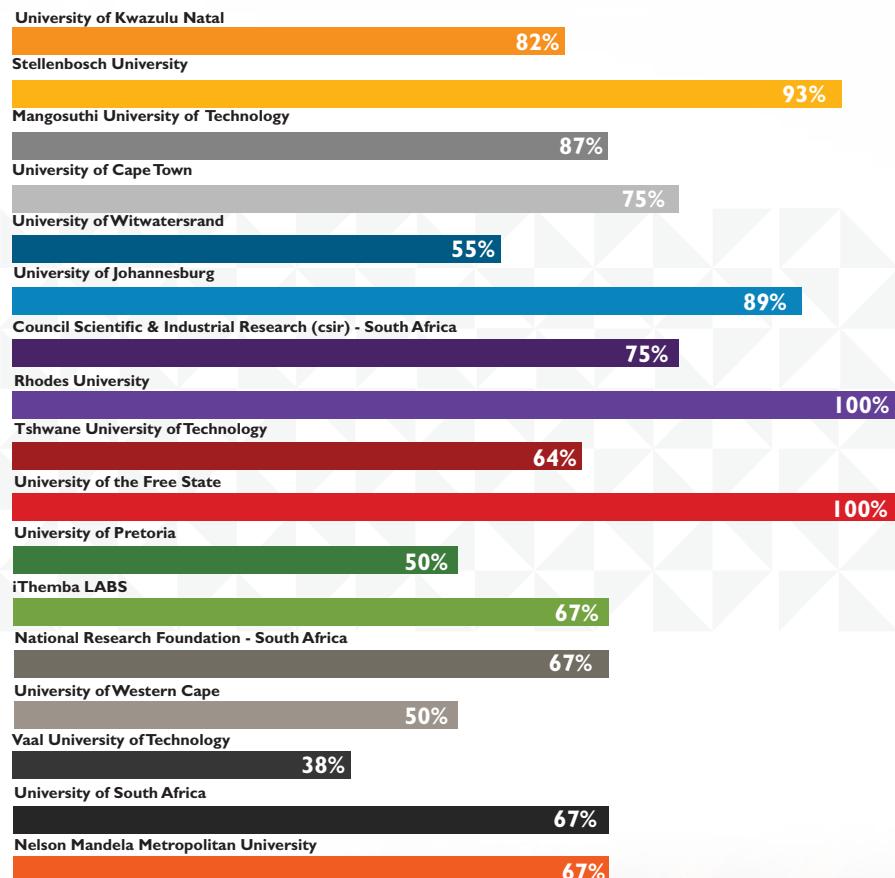


Table 2: List of DUT-SA collaborations on Web of Science documents for the period 2005-2015

NAME	RANK	WEB OF SCIENCE DOCUMENTS	CATEGORY NORMALIZED IMPACT	TIME CITED	DOCS CITED
University of KwaZulu Natal	1	170	0.62	870	62%
Stellenbosch University	2	14	1.56	146	93%
Mangosuthu University of Technology	3	12	1.37	136	93%
University of Cape Town	4	16	0.56	45	75%
University of Witwatersrand	5	20	0.66	33	55%
University of Johannesburg	6	9	0.32	31	89%
Council Scientific & Industrial Research (csir) - South Africa	7	8	0.52	29	75%
Rhodes University	8	3	0.71	25	100%
Tshwane University of Technology	9	11	0.31	21	64%
University of the Free State	10	3	0.51	17	100%
University of Pretoria	11	4	0.45	14	50%
iThemba LABS	12	9	0.45	12	67%
National Research Foundation - South Africa	12	9	0.45	12	67%
University of Western Cape	13	8	0.14	10	50%
Vaal University of Technology	13	8	0.13	10	38%
University of South Africa	14	3	0.44	8	67%
Nelson Mandela Metropolitan University	14	3	0.42	8	67%
North West University - South	15	8	0.21	6	50%
University of Limpopo	16	2	0.28	4	50%
Walter Sisulu University of technology	16	2	0.4	4	50%
South African Medical Research Council (SAMRC)	17	1	0.31	2	100%
Central University of Technology	17	1	0.31	2	100%

According to the publications for the period 2005-2015, DUT collaborated with another 52 countries apart from the in-country South African collaborations. Some of the full analytics are listed below:

NAME	RANK	WEB OF SCIENCE DOCUMENTS	CATEGORY NORMALIZED IMPACT	TIME CITED	DOCS CITED
South Africa	1	675	0.69	3,431	58%
USA	2	69	1.1	423	65%
India	3	53	0.96	294	60%
Australia	4	20	0.7	223	75%
England	5	42	0.8	178	79%
China Mainland	6	16	1.24	127	81%
Spain	7	20	0.5	117	90%
Poland	8	6	1.42	105	83%
Denmark	9	10	1.94	47	60
Thailand	10	12	0.86	44	58%
Germany (Fed Rep Ger)	14	9	0.17	29	33%
Canada	15	9	0.43	26	67%
Switzerland	16	9	1.41	25	56%
Ireland	17	4	0.38	23	50%
Qatar	17	4	3.83	23	75%
Chile	18	4	0.39	22	50%
Brazile	19	5	1.08	20	40%
France	20	5	0.72	13	80%
Belgium	21	8	1.33	11	50%
Hungary	21	1	0.44	11	100%
Norway	21	10	0.61	11	50%
Austria	22	3	1.12	10	67%

DUT Footprint of Regional and Country Collaborations (Web of Science Documents 2005-2015)



Treemap of Research Focus Areas Based on Web of Science 2005-2015 Records



The treemap of research areas based on the Web of Science documents shows the number of times each of these areas have been cited. It is evident that the top four areas for the period 2005-2015 are in biotechnology & applied microbiology, engineering chemical, energy and fuels and physical chemistry.

Thomson Reuters. (2015). InCites dataset updated Oct 7, 2015. Includes Web of Science™ content indexed through Aug 5, 2015. Retrieved 10 October, 2015, from <https://incites-thomsonreuters-com.ezp.lib.unimelb.edu.au/>

RESEARCH AND POSTGRADUATE PERFORMANCE INDICATORS

CATEGORIES	DHET TARGETS FOR UoTs	CURRENT DUT INDICATORS	MINIMUM GAP MEASURE	NEW STRAT PLAN 2019 TARGETS	MINDING THE GAP MECHANISM CATEGORIES
Academic Staff Doctoral Qualifications	40%	19%	21%	40% by 2019	Dept/Faculty Targets Completion Grant
Academic Staff Masters Qualification	60%	46%	14%	60% by 2019	Dept/Faculty Targets HR minimum requirement for employment
Registered Postgraduate Students	7%	3%	4%	Enrolment plan capped	Dept/Faculty Targets Recruitment & Marketing Supervisors Resources
Research Outputs per full time academic staff (0.565 units)	337.305 (for 597 staff)	0.422 (based on 252.15 for 2013 reported in 2014)	0.143 (85.155)	338 by 2019	Dept/Faculty Targets Personal Research Development Plans (PRDPs) Recruitment Strategy Resources

Publication Units

The publication units include journal publications, conference proceedings, book chapters and books. For 2014 the university recorded just over 140 units for which we await DHET approval. However the audited publication units for 2013 reported in 2014 were 128.15 which marked a 61% increase over the last 5 years.

Research Productivity Units (Publications, Masters and Doctoral Graduates) (RPUs)

A research productivity unit (RPU) includes the combination of publication units and masters and doctoral units awarded for students who have graduated. Currently, the weighting for a full-time research masters is 1 unit, course work masters 0.5 units and doctoral graduation is 3 units. There has been significant growth from 66.7 RPUs recorded in 2008 to approximately 284.5 RPUs recorded in 2014. Whilst there is some growth in postgraduate graduations, this area needs to improve significantly.

INSTITUTE DASHBOARD

Institute for Water and Wastewater Technology/SARChI

Research Activity Report: 2014 - 2015

Overall Publication Productivity Units (DHET 2012 Subsidy Report to DUT)

The Institute for Water and Wastewater Technology hosts two B-Rated scientists, the SARChI Chair, Prof TA Stenstrom, and the Director of the Institute, Prof F Bux. It is home to six postdoctoral researchers, three senior researchers, four research associates, 17 doctoral candidates and two technicians. Between 2014 and 2015, Institute researchers published 39 high impact journal articles; 5 book chapters; attended 18 international conferences and 8 national conferences. Five doctoral students and one masters student graduated. Strong research performance is nurtured through the leadership of Professors Bux and Stenstrom. Special congratulations are due to Professor Bux for being awarded a B-Rating due to the high impact of his work and international recognition. This success would not be possible without team work and the contributions of all categories of researchers are much appreciated. We look forward to a more successful year to come!

Professor Faizal Bux is the **Director** and Professor Thor Axel Stenstrom is the **SARChI Chair**. Senior Researchers include:

Dr Sheena Kumari Santosh, Dr Feroz Swalaha and Mr Ismail Rawat. Postdoctoral fellows at the Institute are Dr Abimbola Enitan, Dr Abhishek Guldhe, Dr Shantanu Wahal, Dr Gulshan Singh (SARChI), Dr Ajam Shekh (SARChI) and Dr Antony Adegoke (SARChI).

Doctoral Students at the Institute are Ms Virthie Bhola, Mr Ismail Rawat, Mr Faiz Ansari, Mr Oluwemi Awolusi, Ms Poonam Singh, Ms Nashia Deepnarain, Ms Trisha Mogany, Ms Zinhle Marrengane, Mr Mathews Mthembu, Ms Shanitha Jeewan, Ms Folasade Adeyemo, Mr Luveshan Ramanna, Mr Kunle Faleye, Mr Denis Amoah, Ms Unathi Badela, Mr Aluwani Nemukula and Ms Christine Odina.

Masters Students at the Institute are Ms Thobela Conco, Mr Jashan Gokal, Ms Ayanda Sithebe, Ms Karen Reddy, Ms Prathana Ramsunder, Ms Faye Shunmugam, Ms Lydia Kubheka, Mr Thabo Zwane and Ms Yrielle Roets.

Research Assistants and Administrators at the Institute are Ms Kriveshin Pillay, Mr Julian Arran, Mr Lusanda Matshatshe and Ms Marisa Rajan.

The following students graduated with Doctoral degrees on 2014-2015: Dr Swastika Surujlal-Naicker, Dr Abhishek Guldhe, Dr Abimbola Enitan and Dr Krishan Ramlukan. Mr Luveshan Ramanna graduated with a Masters degree in 2014.



INTERNATIONAL PARTNERSHIPS: BILATERALS

COUNTRY	TITLE OF PROJECT	YEAR	AMOUNT
Algeria	Determining the suitability of using wastewater as a substrate for algal propagation	2014-2016	R 484 000.0
China	Anammox Reactor: Design, enrichment and application for treatment of ammonia rich wastewater.	2015-2016	R 200 000.00
India Brazil South Africa (IBSA)	Evaluation and optimisation of biodiesel production from microalgae	2014-2017	R 1 500 000.00
Egypt	Enhancement effect of magnetic nanoparticles on bio-hydrogen production from organic wastes via pilot – scale anaerobic baffled reactor (ABR)	2012-2014	R 290 000.00
India	Chloroplast Genome Sequencing of Biodiesel Producing Microalgae Strains from Extreme Climates in India and South Africa.	2011-2014	R 370 650.00



INTERNATIONALLY FUNDED CO-OPERATION/PROJECTS

Funder	Partners	Title of Project	Year	Amount
JICA- SATREPS	Durban University of Technology, Nagoya University (Japan), Tokyo University of Agriculture and Technology (Japan), Hitachi Japan, Agricultural Research Council (SA), eThekweni Water and Sanitation	Algae Technology project	2016-2020	R 60 000 000.00
Bill and Melinda Gates Foundation	National Autonomous University of Mexico (Mexico), IFKARA Institute (Tanzania), Department of Community Medicine and PSG Center for Research and Bioethics (India), Indian Institute of Technology Madras (India), RTI International (USA), UNESCO (France)	Developing a uniform Soil Transmitted Helminths analysis consortium for analysing faecal waste samples- India, Senegal, Mexico, Belgium and United States of America	2015-2016	R 4 463 274.00
National Council for Scientific and Technological Development (CNPq/MCTI), Brazil	Federal University of Ceará, Federal University of Espírito Santo, Federal University of Mato Grosso do Sul	Quantitative and qualitative microbiological risk assessment of decentralized sanitation technology arrangements	2015-2017	R 550 000.00
Stockholm Environment Institute (SEI)	Stockholm Environment Institute (SEI)	WASH and RESCUE. Water, Sanitation and Hygiene in Resilient Cities and Urban areas adapting to Extreme waters	2014-2015	R 590 000.00
DUT INTERNAL FUNDING	Host: University of Oklahoma (USA) Partners: 70 Countries	The Global Microbiome project	2015-2017	R 25 000.00
DUT INTERNAL FUNDING	Host: Aalborg University (Denmark) Partners: Europe, Africa, USA	EBPR Microbial Observatory	2015-2017	R 25 000.00

COLLABORATIONS

PROVINCIAL	NAME OF COLLABORATOR
University of Kwa-Zulu Natal	Professor A Gupthar (Department of Biochemistry)
	Professor B Pillay (Department of Microbiology)
University of KwaZulu Natal	Professor C Buckley (Pollution Research Group-PRG)
eThekini Water	Mr S Moodliar
Darville Wastewater Works (Umgeni Water Board)	Ms M Murigwathoho
Hammarsdale Wastewater Works	Mr V Mahabeer
Northern Wastewater Works	Mr V Nuliah
Southern Wastewater Works	Mr J Naicker
Kingsburgh Wastewater works	Mr R Dhukan
Ilovo sugar	Mr C Kruger
	Mr C Kruger
TIA	Dr L Shoba
	Ms A Burger
Umgeni-PMB	Ms N Ngcobo
	Dr D Trollip

NATIONAL	NAME OF COLLABORATOR
University of Cape Town	Professor S Harrison
University of Stellenbosch	Professor A Botha
Tshwane University of Technology	Professor M Momba
CSIR – Pretoria	Dr R Laloo Mr D Maharaj
City of Cape Town	Dr R Magoba
Tshwane Municipality	Mr K Esterhuyse Mr L Regenstein
Mhlathuze	Mr S Ntlhoro
University of KwaZulu-Natal, Centre for Water Resources Research, Pietermaritzburg	Dr J Jewitt
University of KwaZulu-Natal, Pollution Research Group	Professor C Buckley
School of Life Sciences University of KwaZulu-Natal (Westville Campus)	Dr N Rodda
eThekweni Health Unit	Mr N Larrat
Mangosuthu University of Technology	Mr T Zwane
Tswane University of Technology, Pretoria	Professor M N Momba

INTERNATIONAL	NAME OF COLLABORATOR
CNR IRSA, Italy	Professor V Tandoi
University of Aalborg, Denmark	Professor P Nielsen
Egypt Japan University of Science and Technology	Dr Ahmed Tawfik
Columbia University	Dr Karthik Chandran
University of Madras	Professor A Elumalai
Georgia State University	Dr M Singh
Chemical & Petrochemical, Chemical & Fertilizer Ministry, Government of India	Dr R Misra
Okhlahoma University, USA	Professor J Zhou
Nagoya university, Japan	Professor H Kanda
Tokyo University of Agriculture and Technology, Japan	Professor O Agyeman
Federal university of Piaui, Brazil	Professor CVR de Moura
Tongji University, China	Professor J Ling
Hitachi, Japan	Dr A Mochizuki
Indian Institute of Technology(BHU), India	Professor YC Sharma
Central University of Jharkhand, India	Dr B Singh
Indian Institute of Technology Delhi, India	Dr SK Gupta
Water & Health Pty Ltd, Australia	Dr S Petterson
Kasetsart University, Thailand	Dr H Overgaard
UNIVERSIDAD EL BOSQUE, Colombia	Dr M Matiz
Stockholm Environment Institute (SEI)	Dr A Johannessen
Stockholm Environment Institute (SEI)	Dr A Rosemarin
Centre for Environmental Management and Decision Support (CEMDS) and Uni. of Nat. Res. and Life Sci. Austria	Dr M Starkl
Department of Public Health and Environment Water Sanitation Hygiene and Health , Geneva Switzerland	Mrs J De France
Department of Public Health and Environment Water Sanitation Hygiene and Health, Geneva	Mrs K Medlicott
Department of Community Medicine and PSG Center for Research and Bioethics, India	Professor S Ramalingam

INTERNATIONAL	NAME OF COLLABORATOR
Indian Institute of Technology Madras, India	Professor L Philip
Institute of Life Sciences, Ahmedabad University, Ahmedabad, India	Dr R Shanker
Water and Environmental Engineering Group, Alesund University, Norway	Professor R Seidu
Public Health Agency of Sweden	Public Health Agency of Sweden- General Microbial Methods
Environmental Health Sciences, University of Alberta, Canada	Professor N Ashbolt
RTI International, USA	Dr S Grego
United Nations Educational, Scientific and Cultural Organization. France	Dr B Jimenez-Cisneros
Ghent University - Department of Virology, Parasitology and Immunology, Belgium	Dr B Levecke
Federal University of Ceará. Brazil	Professor A Bezerra dos Santos
Federal University of Espírito Santo. Brazil	Professor R F Goncalves
Federal University of Mato Grosso do Sul. Brazil	Dr P L Paulo
Bill and Melinda Gates Foundation. USA	Dr C E Hensman
National Autonomous University of Mexico ,UNAM, Mexico	Dr C M Rendon
National Autonomous University of Mexico, UNAM, Mexico	Dr J A B Perez
IFKARA Institute, Tanzania	Dr J Thomas
Swedish National Veterinary Institute	Dr K Torell

Community partnerships	Industrial Partnerships	Memoranda of Agreement	Student Exchange Programs
Water quality analysis for SDCEA Water quality analysis and advice for Isipingo Rate payers association Groundwater contamination-Durban South Basin OXFAM	AVI Products Hitachi Europe Illovo Sugar-Sezela Rheochem Protea Chemicals	eThekwin Municipality Mhlathuze Water City of Cape Town Tswane municipality	Department of Chemistry, Federal University of Piaui- Brazil School of Environmental Engineering, Suranaree University of Technology- Thailand

GRANTS

FUNDER	AMOUNT
NRF South African Research Chairs initiative (2012-2017)	R 12,500,000.00
NRF National Equipment Program 2014/2015	R 1,272,000.00
NRF National Equipment Program 2013/2014	R 2,001,400.00
NRF Algeria Bilateral (2013-2015)	R 484,000.00
NRF IBSA Trilateral (2014-2017)	R 1,500,000.00
NRF China Bilateral (2015-2016)	R 200,000.00
TIA Seed Funding Phycocyanin	R 450,000.00
TIA Seed Funding Website	R 260,000.00
TIA Seed Funding Large Scale cultivation of Microalgae	R 500,000.00
TIA Seed Funding Harvesting	R 110,000.00
WRC Activated Sludge Bios	R 1,600,000.00
WRC Filamentous Survey (2015-2017)	R 629,500.00
RDG- F Bux 2014/15	R 200,000.00
RDG- TA Stenstrom 2014/15	R 200,000.00
RDG- F Bux 2015/16	R 80,000.00
RDG- TA Stenstrom 2015/16	R 80,000.00
NRF National Equipment Program 2014/2015-Stenstrom	R 4,336,000.00
Bill and Melinda Gates Foundation (2015-2016)	R 4,463,274.00
National Council for Scientific and Technological Development (CNPq/MCTI), Brazil (2015-2017)	R 550,000.00
Water Research Commission 1	R 215,400.00
Water Research Commission 2	R 200,000.00
Stockholm Environment Institute (SEI) (2014-2015)	R 590,000.00
	R 32,421,574.00

INTERNATIONAL CONFERENCE PRESENTATIONS – 2014/2015

Amoah, ID., Seidu, R., Abubakari, A., Larbi, JA., Stenstrom, TA. and Abaidoo, RC. (2015). Risk of ascaris infection associated with the use of wastewater in urban agriculture. 18th International Symposium on Health-Related Water Microbiology. WaterMicro 2015 Symposium. 13 - 19 September 2015. Lisbon, Portugal

Arran, JT. and Stenstrom, TA. (2015). Stakeholder Perceptions Of Disaster Risk Reduction Strategies Related To Water Sanitation And Hygiene: Case Study Ethekwini. 16th WaterNet/WARFSA/GWP-SA Symposium on Integrated Water Resources Management and Infrastructure Planning for Water Security in Southern Africa. 28 - 30 October 2015, Mauritius.

Arran, JT., Stenstrom, TA. and Johannessen, A. (2015) Stakeholder Perceptions of Disaster Risk Reduction Strategies Related to Water Sanitation and Hygiene: Case Study eThekwini. 16th WaterNet/WARFSA/GWP-SA Symposium on Integrated Water Resources Management and Infrastructure Planning for Water Security in Southern Africa. 28 - 30 October 2015. Mauritius.

Cabezas,L., Cabanzo,W., Santa, F., Olano,VA., Sarmiento, D., Vargas, S., Jaramillo, JF, Stenstrom, TA., Overgaard, H. and Matiz, MI. (2015) Spatial distribution of the dengue vector Aedes aegypti in rural areas of Anapoima and La Mesa municipalities, central Colombia Spatial Statistics: Emerging Patterns. 9-12 June 2015 | Avignon, France

Deepnarain, N., Sheena Kumari, SK., Pillay, K. and Bux, F. (2014). A Cumulative Logit Model To Control Filamentous Bulking In Wastewater Treatment Plants. IWA World Water Congress. September 2014. Lisbon, Portugal.

Dennis, Al., Seidu, R., Abubakari, A., Heistad, A., Larbi, JA., Stenstrøm, TA., and Abaidoo, RC. (2015). Risk of Ascaris infection associated with the use of wastewater in urban agriculture, in Kumasi, Ghana. 18th International Symposium on Health-Related Water Microbiology. 13th -19th Sept. 2015 Lisbon, Portugal

Govender,I., Stenstrom,TA., Jewitt, G, and O'Brien, GC. (2015). Ecological Risk Assessment To Evaluate The Socio-Ecological Consequences Of Water Resource Use Options In The Umngeni Catchment, Kwazulu-Natal. Southern African Society of Aquatic Scientists (SASAQS) 2015 CONFERENCE, 28 June - 2 July 2015.

Guldhe, A., Misra, R., Singh, P., Rawat, I. and Bux, F. 2015 Efficient electrochemical process for the harvesting of small size microalgae by using nonsacrificial carbon electrodes. The 5th International Conference on Algal Biomass, Biofuels and Bioproduct. 7-10 June 2015. San Diego, USA.

Guldhe, A., Singh, P., Sheena Kumari, SK., Rawat, I., Permaul, K. and Bux, F. (2015) Biocatalytic conversion of lipids from Scenedesmus obliquus to biodiesel using extracellular and intracellular lipases. The 5th International Conference on Algal Biomass, Biofuels and Bioproducts. 7-10 June 2015. San Diego, USA.

Gupta, S.K., Guldhe, A., Ansari, F.A., Rawat, I. and Bux, F. Evaluation of microalgal flocculation efficiencies of Chitosan and its effects on lipid yield. International conference on Polymeric biomaterials, Bioengineering and biodiagnostics. 27-30 October 2014. New Delhi, India.

Misra, R., Guldhe, A., Singh, P., Rawat, I. and Bux, F. (2014) Electrochemical Microalgae harvesting process by using Non-Sacrificial Carbon Electrode: An Effective and Advance Option for Biodiesel Production. 4th International Conference on Algal Biomass, Biofuels and Bioproducts. 15 - 18 June 2014. Santa Fe, New Mexico, USA.

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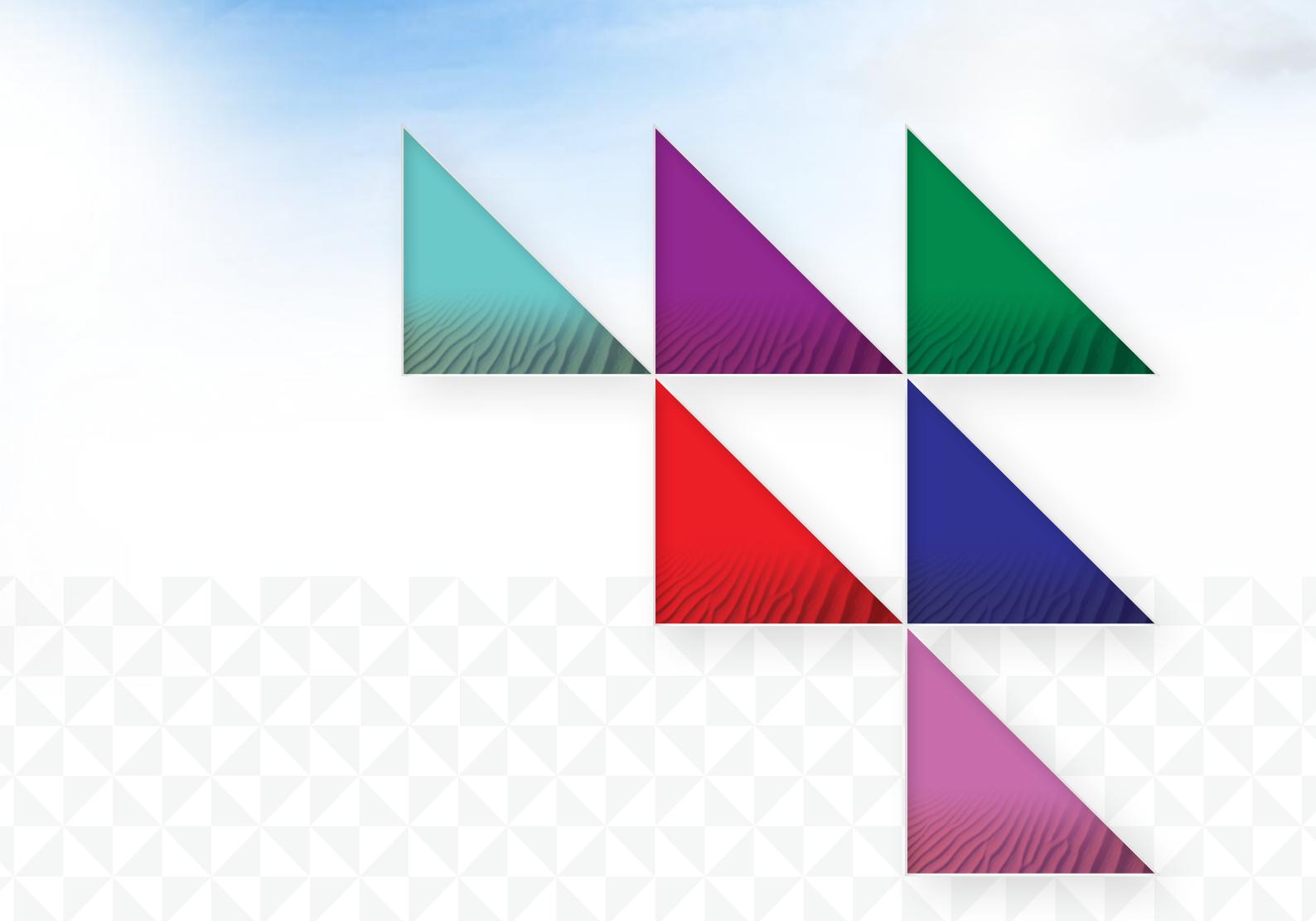
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THE URBAN FUTURES CENTRE



THE URBAN FUTURES CENTRE

The Urban Futures Centre (UFC@DUT) is a Vice Chancellor led initiative. DUT prides itself on developing skills and knowledge to create and make use of up-to-date technology and in so doing to advance society in very direct ways. This focus on productive citizenship, humanist ethics and applied science makes our university an ideal home for an intellectual and practical hub geared toward shaping urban spaces that are vibrant, resilient, accessible, egalitarian, caring and well designed.

There were many rationales for establishing the UFC and basing it in Durban. The eThekweni municipality, which includes neighbouring towns, has a population of almost 3.5 million. This makes it the biggest city on the east coast of the African continent. There are other salient features, aside from the significance of its population size. Durban hosts the second largest port in the Southern Hemisphere and the busiest port in Africa. The port, in itself, is a massive place of flow of goods, people, technology, and ideas. It provides Durban with an added export advantage when compared to other South African cities. In addition, Durban is a major manufacturing hub - the second largest in South Africa. It is home to a strong chamber of commerce and a labour movement with a very rich history. It has been a key urban space for critical thinking and resistance, both against colonialism and apartheid. Durban has always been, and continues to be, a fluid, vibrant and contested city space.

Where the City of Durban begins and ends is complex, as urban and rural spaces merge into one another in ways that are

inimitable, raising interesting theoretical and practice questions about what cities really are. The city's fluidity and diversity make it an ideal city context to test out new ideas, designs, and plans. The UFC provides a dynamic home for global intellectual exchange and comparative urban projects. Located in the Faculty of Engineering and Built Environment. Central to this Faculty are design- and solution-driven processes and actors, making it the

logical home for UFC. However, while engineers, urban planners and architects are well placed in the hub of such processes, their visions and outcomes can be limited by technical, specialist and structural considerations. The UFC therefore aims to promote a creative synergy between staff already located in this Faculty with a wide array of scientists and specialists, particularly from the social and human sciences. This, it is hoped, will inspire non-traditional ways of thinking about urban futures, while maintaining the value of technology to improve the quality of life of urban dwellers.

Professor Monique Marks is the Director of the UFC and current Researchers include Dr Kira Erwin and Dr Nomkhosi Xulu Gama. Ms Pruthvi Karpoormath is the Administrator and Dr Dylan McGarry is the Postdoctoral Fellow.

The Centre's themes were determined based on current debates within urban centres both nationally and internationally, as well as on the more localised urban dynamics of Durban as the city that hosts the centre. Project choices are determined by their resonance with the guiding principles of the Centre. The themes are:

Urban safety and risk management

Perceived and real safety are fundamental to the health of any city. Safety, in the view of the UFC@DUT, does not, however, only pertain to physical safety. It also includes the risk management and securitisation of health, food, energy and water.

Urban mobility and flows

The UFC@DUT, drawing on the work of Castells, believes that cities are places of flow. This includes the flows of goods, services, information, people, water and energy, transportation and food. Urban creativity, aesthetics and cultural dynamism. Urban spaces are, and should be, co-created spaces of creativity, cultural dynamism and social connection.

The governance of transition and the transition of governance

As cities shift and flows occur; new forms of governance are required. At the same time, governance arrangements need to be established to facilitate flows and transitions.

Digital and invisible cities

Cities are not simply 3D entities. They operate digitally, and in some instances, their existence is virtual. In addition, cities hold within them people, places and even structures that are 'invisible' (especially in regard to dominant and elite groupings). It is the less visible entities of cities that have proven time and again to be the most resilient components of them.



RESEARCH PROJECTS WITHIN THE UFC

Street Level Drug Use

The Street Level Drug Use project sits at the nexus between communities affected by street level addiction, the addicts themselves and the various institutions responding to drug addiction in the city of Durban. It is a trans-disciplinary research project, bringing together those trained in sociology, criminology, education, art and drama. As a participatory action research project it will also include city officials, police officers and civil society actors in designing the research and in developing strategies. The purpose of this initiative is to gather nuanced narratives from all those affected and begin investigating appropriate responses both at grassroots and policy levels. While this project educational focus might help caution, dispel speculation and assist in presenting practical skills and solutions, we also feel it would be a highly valuable space to explore emancipatory social learning praxis in complex learning environments, and offer real tangible research outputs for those different departments in the city aiming to respond to the drug crisis. A major purpose of this project is to provide the very human and embodied face of this drug, and enabling a more enriched and grounded way of coping with this issue. We see this project as acting as a nexus point or a hinge in the cross-sector citywide response to the degrading effects of Whoonga. While this project will focus on Whoonga drug use and its negative effects on individuals and communities in Durban, the results of this project will have very real outcomes for other cities dealing with the dilemma of the harmful effects of street level drug use. Ways of reducing harm for all affected persons is a fundamental of this project.

Project Partners: Centre of Criminology, University of Cape Town; HIV/TB Care; Durban Metropolitan Police; Safer Cities Department, eThekwin Municipality; Dennis Hurley Centre; Big Brotherhood Community Theatre Group; Central Drug Authority; UNODC (Pretoria Office); doctors in private and public practice.

Imagining a City Without Walls

The Imagining a City Without Walls project was initiated in April 2014. The aim of this project is to bring together key network actors to interrogate the relationship between home security and defensive boundaries, particularly walls. Through working closely with policing actors as our key partners, the roles that walls play in suburban spaces is being investigated. This has already opened pathways for fresh deliberations and imaginings about suburban boundary design. The approach of Crime Prevention through Environmental Design is critical in framing this project and its design outcomes. The basic assumption and dominant design 'imperative' that high walls make suburban residents safer will be questioned through a process of conversations, ethnographic explorations and incident reports. This research is already well underway and the first paper resulting from this has already been published in a volume on sustainable cities. In addition, the Alliance Francaise in Durban has decided, as a result of this project, to break down their boundary wall and in its place create a boundary that is more transparent, welcoming, aesthetically pleasing while at the same time optimising safety through natural surveillance. This complex project with the Alliance Francaise will be completed by mid-2016. Key partners: Alliance Francise Durban; DUT Architecture Department; Council for Scientific and Industrial Research; Blue Security; ADT; Durban Metropolitan Police; SAPS Umbilo and Westville; Morningside Residents' Committee; dala Architects; eThekweni Safer Cities.

Dreaming Workshops: Young people's imagining of a Future South Africa

This research projects aims to explore how young people, in this case Grade 11 students in Durban, imagine a socially just and more equal future South African society. Specifically, in this project we are interested in how young people imagine a future society in relation to ideas of race, racism and non-racialism. Existing studies on non-racialism indicate that for many older South Africans the realisation

of non-racialism is best left to the younger generations who do not carry the historic baggage of their own generation. Romanticising 'untainted' youth as able to transcend a troubled past is not an unusual response in transitional societies. However we need to be cautious of displacing responsibility for change onto the young in society particularly given the various ways in which inequality is reproduced in South Africa. Acknowledging this we do think it is important to listen carefully to the imaginings of young people's dreams of a more socially just world. To do this we use a methodology of Dreaming Workshops, these sessions not only offer a space for utopian dreaming but importantly then use these dreams to identify and reflect on practices and power relations in the present that create obstacles or enablers to these future trajectories.

Partners: Dr Kathryn Pillay (UKZN Sociology); Selected Durban High Schools; KZN Department of Education

Funder: Stellenbosch Institute for Advanced Studies (STIAS)

Kenneth Gardens Community Project

Kenneth Gardens Community Project is a joint DUT/Community partnership that focuses on the Kenneth Gardens estate, Durban's largest municipal subsidised low-cost housing estate. The project has both research and community engagement components, and sees these components as integral to each other rather than as separate spheres of interaction. The primary research components include a 3 year Oral History project that will cumulate in a book titled: Voices of Resilience: A Living History of the Kenneth Gardens Municipal Housing Estate in Durban South Africa. Research project also include evaluation on engagement activities as well as a range of smaller research projects on various aspects of the community life such as youth narratives and Health. The established engagement projects include a free homeopathic and food nutrition clinic run every Wednesday in the estate, as well as capoeira, dance and digital media programmes

for younger residents and youth. Partners: Senzokuhle Community Based Organisation (NPO); Carrots and Peas (NPO); Glenridge Church; Glenmore Primary School; Rotary Club Morningside and Isipingo; Turquoise Harmony Funder: National Research Foundation (NRF) Community Engagement grant

Blue Skies - Reimagining a discipline: a radical examination of Town Planning

With increasing urbanization and increasing levels of poverty and disparity within urban spaces there is no better time than the present to ask how we can do better in regard to urban planning and design? This project brings together a diverse range of scholars and practitioners to deliberate on unexplored and alternative practices of urban design and planning within the context of South African cities.

The DUT has already completed the process of putting together a proposed Master plan for creating an educational precinct around the university that incorporates neighbour city spaces. The proposed plan links its various city campuses in a walking corridor through the Curry's Fountain and Warwick Junction. This DUT proposal acts as a live testing site for three small pilot projects that incorporate and make use of alternative methodological practices that lead to design proposals. Once completed the data and findings from the pilots will be contrasted with the original Masterplan to see whether these findings raise critical questions about how we go about planning and design spaces. The pilot findings will present alternatives that work with and enhance everyday livelihoods and experiences rather than design them out of the plan. The pilots will enable reflection on, and possibly redevelopment of, the methodologies we imagine would benefit students and staff practicing in the field of urban design and planning. In this way the first year of the project becomes a laboratory for developing radical new concepts within a discipline and for testing these alternatives within a live project.

Partners: Glen Robbins (UKZN); Peter Robinson; Soobs

Munsamy; MILE; Bridget Horner; Miranda Young-Jahangeer; Doung Jahangeer; Abigail Knox; Jonathan Edkins
Funder: National Research Foundation (NRF) Blue Skies Grant

The UFC Weekly Seminar Series

Every Thursday the UFC hosts a seminar. The number of guests we have had for these presentations range from a minimum of 15 to a maximum of 70. Participants in the seminars include government officials, NGO representatives, academics and students from both DUT and UKZN (from a variety of disciplines). The presenters too are varied, some of whom are urban design practitioners, urban scholars; architects; philosophers; city activists; and city officials. The seminar series is very robust and has created a real sense of inter-disciplinary engagement across the wide variety of disciplines at DUT. The UFC also hosts public debates on issues of critical public interest including urban design and security; Vhoonga dilemmas; and xenophobia.



PROJECTS IN THE PIPELINE

Review of the Durban Metropolitan Police

In recent years the Durban Metropolitan Police have gained a fair degree of negative publicity resulting in what is most likely a loss of confidence from the general public. Media reports revealed allegations of maladministration, abuse of powers, conduct that demonstrates a lack of respect for human dignity in the course of policing, sex scandals, leadership battles, and a problematic labour relations environment. This is a cause of concern to the City Manager who is well aware of the importance of the police to the good governance of the city of Durban. As a result he has requested that Prof. Monique Marks from the Urban Futures Centre lead a comprehensive review of the Durban Metropolitan Police. This review would lead to a process of redefining a vision/strategy for the Durban Metropolitan Police. Such a strategic engagement could well require definite shifts in the organisational structure and culture of the Durban Metropolitan Police. The review will primarily be an organisational health appraisal. This approach is far more open than a review that is directed at more legalistic issues such as corruption and maladministration.

The review will conclude with a programme for strategic change and intervention. This might involve adjusting the mission and vision of the organization, management styles, systems of accountability, career structuring, and so on. The goal here is to improve the overall wellbeing and effectiveness of the Durban Metropolitan Police. In addition, a series of dialogues will be set up with members of the Metropolitan Police, particularly at the middle and top leadership levels. The reason for this is to create a space for harmony from the top-down, which will hopefully have a positive impact on the organisational culture and command system more generally.

This project is commissioned by the office of the eThekini City Manager. Finalisation of the budget for the project is

still under review. Review team: Prof. Monique Marks; Antony Altbecker (policing expert and researcher); Dr Todd Wuestewald (Criminal Justice Program, University of Oklahoma and retired police chief); Peter Neyroud (Founder of the National College of Policing in England and previous Chief Constable of the Thames Valley Police); Dr Rama Naidu (CEO of the Democracy Development Programme and Gestalt Organisational Development Practitioner).

Migrants and the Inclusive City

The history of South Africa is a history of migratory flows; in the long view of history we are in one way or another all migrants to the modern geographic borders of South Africa. Under apartheid discriminatory segregation policies created a large black migrant labour force to supply the urban areas, radically shaping the urban landscape and rural and urban networks. Partly due to past colonial and apartheid ideology, there is in democratic South Africa a continued emphasis on different social, cultural and even moral spheres associated with spatial geographies and categories of people. The most recent of which (although hardly new taking a historical lens) is the discourse around the flows of migrants, immigrants and refugees coming into South Africa from other African countries. In April 2015 there was large scale violent attacks on people seen as "foreign" around and in the Durban city centre, and then spreading to other parts of the country. These attacks mirrored the earlier 2008/2009 attacks in South Africa and yet we still lack a responsive local policy framework or proactive educational and awareness campaigns.

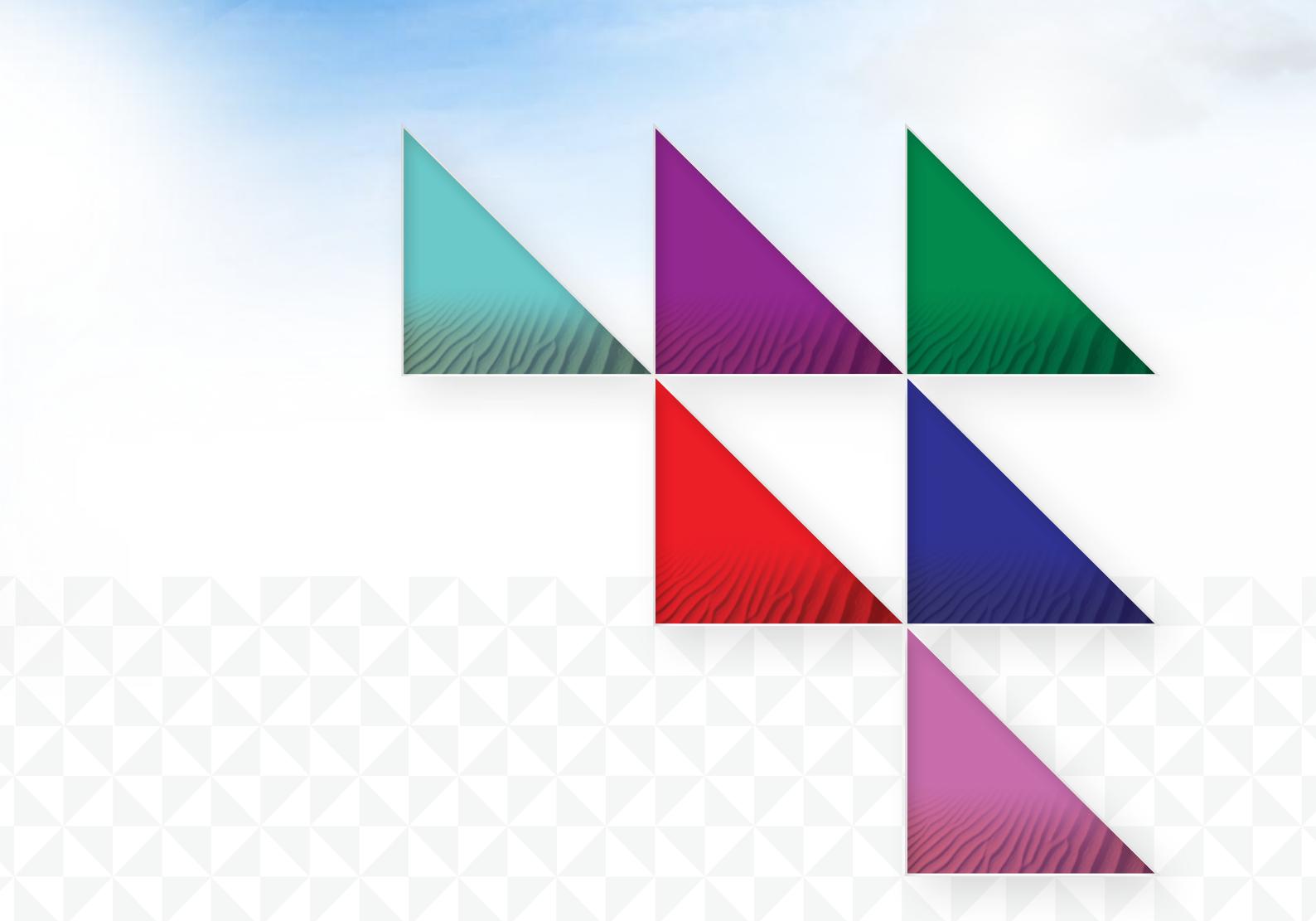
This project uses a gendered lens to collect the oral history of migrant women in Durban. This project moves the diverse stories of women and other migrants in Durban directly into strategically planned educational dialogues

with key stakeholders. The aim here is not only to focus on the diversity within this constructed group but to highlight unexpected commonalities with many South Africans, migrants or otherwise, who share the same everyday contexts of trying to build a 'good' life. The project brings together experienced academics, civil society activists as well as a collective group representing migrants from 15 African countries that live and work in Durban. It is innovative in that it uses creative methods of storytelling (oral histories, radio scripts, short documentaries and community participatory theatre) to directly influence government knowledge on their own practices and policy discussions around social integration and inclusion of migrants in the city.

A related potential project will focus on migrants, city planning and peace building. Should funding application be successful, this project will compare the cities of Belfast and Durban. The project emerged from a concern with what is termed xenophobia in the Durban context and hate crime toward migrants in the Belfast context. Underlying this antagonism toward migrant populations in both countries is deficits in regard to urban planning for migrant groupings, incomplete or non-existing peace making and peace building projects; and non-inclusive notions of national identity. A funding application for this project has been submitted to the NRF/ECRC.

Partners: Democracy Development Program (DDP); African Solidarity Network (ASONET); Queens University, Belfast.





**FOOD SCIENCE AND
TECHNOLOGY**
RESEARCH GROUP (FSTR)



INDIGENOUS CLIMATE SMART FOOD CROPS TO ADDRESS CURRENT FOOD, NUTRITION AND HEALTH CHALLENGES

It is predicted that within the next 50 years, food development will be consumer driven. The demand for healthy and convenient products will continue to grow due to increasing consumer awareness of the relationship between food, nutrition and health. The world population will nearly double and the dwindling food supply will have to increase to cater to this change. The warming global climate will place additional pressures on food supply. All these concerns underpin the research focus of the Food Science and Technology Research Group (FSTR). By Indigenous Climate Smart Crops (ICSC), we refer to range of crops with good nutrient profiles that are well-adapted to the transforming ecology. ICSCs currently experience a low level of utilisation, as they are traditionally grown by local farmers – in many cases solely for subsistence. Examples include bambara groundnuts, cowpeas, pigeon peas, millet and amadumbe (*Colocasia esculenta*). These crops may play a role in addressing agricultural and food challenges in the near future.

Research by the FSTR Group, which was founded in 2013, is directed to the innovation of nutritious and health promoting ICSC foods for safe, household nutrition. Food insecurity remains a major issue in rural households in KZN.





The research team has been combining indigenous knowledge and modern technology to develop nutrient-rich foods for rural household consumption. Main areas of research within this focus include food processing; biomolecule characterization and application in food and non-food systems; as well as food safety regulators, with emphasis on mechanisms of adaptation, resistance and persistence of food-borne pathogens.

The biomolecule research, led by Dr Eric Oscar Amonsou, focuses on the characterisation of proteins, polysaccharides and their complexes from ICSC. Applications of these biomolecules are in the fields of emulsion stabilisation, formation of hydrogels and complex coacervates for the controlled release of bioactive compounds. The food nanotechnology Vambit of biomolecule research focuses mainly on the characterization of starch nanocrystals (SNC) and application in bioplastics.

Within the last two years, FRST has established strong collaborative research networks both nationally and internationally. FSTR is also currently engaged with industry partners for the development of value-added products.



DUT RESEARCH FOCUS AREAS: VISION 2014 to 2018

Embedded within our local context

The University needs to create competitive and prestigious research centers and focus areas sponsored by public and private funding sources with the aim of becoming one of the favorite choices for the best faculty staff and students both nationally and internationally.

Research expenditure will need to be directed towards making the University becoming self sustainable in the next five years. This would then assist in changing the current University culture and increase research income.

The DUT Research Focus Areas (RFAs) are divided into two groups, that is, the established RFAs and the emerging RFAs as follows:

NO	MAIN RESEARCH FOCUS AREA	STATUS	CURRENT FUNDING SOURCES
1	Water*	Established Research Focus Area. Institute Status at DUT I SARCHI Chair Existing M & D students, Postdocs (Interfaculty)	WRC/NRF/DUT
2	Enzyme Technology	Established Research Focus Area Existing M & D students, Postdocs (Biotechnology, Water Institute)	NRF/DUT
3	Nanocomposites	Established Research Focus Area Existing M & D students, Postdocs (Engineering)	NRF/Other Funders/DUT
4	Food & Nutrition Security	Established Research Focus Areas in (Food Technology & Food Nutrition) Existing M & D students (AS, iSS)	DUT AU
5	Computational and Bio-analytical Chemistry.	Established Research Focus Area Existing M & D Students, Postdocs (AS)	NRF DUT
6	Systems Science*	Established Research Focus Area Existing M & D students, Postdocs (Interfaculty)	AU DUT DST
7	Indigenous Knowledge Systems & Drug Discovery	Established Research Focus Area M & D students (AS, Management Sciences)	NRF URC DUT
8	Peace Studies (ICON)	Established Research Focus Area M&D students (Management Sciences) *Community engagement projects.	DUT Other
9	Health Studies	Emerging Research Focus Area Health Systems Strengthening (HIV/AIDS) Enhance Care Foundation (ECF) & DUT MoU.	External Funding NIH Funding

NO	MAIN RESEARCH FOCUS AREA	STATUS	CURRENT FUNDING SOURCES
1	Energy	Emerging Research Focus Area Some M & D students & Postdoc	THRIP (INDUSTRY) TIA DUT
2	Urban Futures Centre	(New) Research Focus Area Interfaculty/ interdisciplinary Engineering and the Built Environment M & D students Postdocs	DUT NRF Other
3	(Economics & Business Studies)- Tourism, Community Development, Hospitality and Governmental Studies	Emerging Research Focus Area M & D students (Management Sciences) Postdocs Web of Science records (Economics & Business Studies)	DUT
4	Child and Martenial Health	(New) Health Sciences	DUT MRC
5	ICT and Society	Emerging Research Focus Area Some M & D students (Accounting and Informatics)	DUT Other
6	Transformation through the arts and design	(New) Faculty of Arts and Design	-
7	Transformational Educational Studies	New (Action Research, Engineering Education & Interdisciplinary Studies)	NRF DUT
8	Higher Education Management studies	(New) Interdisciplinary Institutional Research	DUT

*Institute status at DUT

AD	Arts and Design
AI	Accounting and Informatics
AS	Applied Science
EBC	Engineering and the Built Environment
ECF	Enhanced Care Foundation
HS	Health Sciences
NRF	National Research Foundation
TIA	Technology and Innovation Agency
WRC	Water Research Council





RECOGNISING RESEARCHERS

RECOGNISING RESEARCHERS

NRF Ratings 2014-2015

The university recognises NRF ratings as part of quality assurance and for ensuring that our researchers contribute to high impact knowledge, both nationally and internationally. Ratings are awarded based on a researcher's recent outputs and impact, as perceived by international peer reviewers. The university is pleased to report that as of 2015 the number of rated researchers affiliated to our university has increased from 14 in 2013 to 24 in 2015. The University has a number of emerging researchers contributing to this increase, through new appointments as well as from the postdoctoral programme. The university also celebrate the first NRF B-Rating awarded to its own Alumni. Rating categories allocated by the NRF consist of the following (see <http://www.nrf.ac.za/rating>):

- A – Leading international researchers
- B – Internationally acclaimed researchers
- C – Established researchers
- P – Prestigious Awards
- Y – Promising young researchers.

DUT's pool of researchers with NRF-rated status is shown below:

Surname	Init	Title	Rating	Research Specialisation	Gender	Department	Faculty
Adeyemo	JA	Dr	Dr	Integrated water resources management, Evolutionary algorithms, Multi-objective optimization , Irrigation engineering	Male	Civil Engineering	Engineering and the Built Environment
Amousou	EO	Dr	Y2	Food processing, Food chemistry	Male	Biotechnology and Food Technology	Applied Sciences
Bharuth-Ram	K	Prof	C2	Nuclear Physics, Materials Research and technology, Energy systems	Male	Mathematics, Statistics and Physics	Applied Sciences
Bisetty	K	Prof	C3	Computational chemistry, Bioanalytical chemistry	Male	Chemistry	Applied Sciences
Bux	F	Prof	B3	Wastewater technology, Algal biotechnology, Wastewater bioremediation	Male	Institute for Water and Wastewater Technology	Research & Postgraduate Support
Chapman	M	Prof	A	*Transfer to DUT	Male	Faculty of Arts and Design	Arts and Design

Surname	Init	Title	Rating	Research Specialisation	Gender	Department	Faculty
Deenadayalu	N	Prof	C3	Thermodynamics, Ionic liquids, Pulp and paper; Solvent extraction, Phase equilibria, Chemical thermodynamics, Activity coefficients, Lignocellulose, Pulp and paper - Biotechnology, Chemical biotechnology	Female	Chemistry	Applied Sciences
Duffy	KJ	Prof	C3	Mathematical modelling, Ecological modelling, Monte Carlo methods, Computational mathematics	Male	Institute of Systems Science	Institute of Systems Science
Gqaleni	N	Prof	C3	Indigenous health system , African traditional medicine	Male	Faculty Office	Management Sciences
Harris	GT	Prof	C2	Development studies, Economics, Education, Development economics, Peace studies	Male	Entrepreneurial Studies and Management	Management Sciences
Kanny	K	Prof	C2	Nanomaterials, Conductive polymer nanocomposites, Analytical polymer science, Natural fibre reinforced composites, Robotics, Nanoclay polymers, Nanostructures, Plastic design of structures, Fatigue and fracture	Male	Mechanical Engineering	Engineering and the Built Environment
Kudanga	T	Prof	Y2	Biocatalysis, Bioactive compounds, Antioxidants, Biotransformations, Antimicrobials, Environmental biotechnology, Lignocellulose	Male	Biotechnology and Food Technology	Applied Sciences
Kuttan Pillai	SK	Dr	C3 (New rating 2015)	Basic and Applied Microbiology	Female	Institute for Water and Wastewater Technology	Research & Postgraduate Support
Marks	M	Prof	B3	Community development, Community based research, Policing - Studies, Security management, Ethnography, Community engagement, Urban studies	Female	Urban Futures Centre	Engineering and the Built Environment

Surname	Init	Title	Rating	Research Specialisation	Gender	Department	Faculty
Meyiwa	TSC	Prof	C3	Gender and culture, Gender and education, Gender studies (Women)	Female	Registrar's office	Vice Chancellor's Office
Odhav	BO	Prof	C3	Antimalarial drugs, Anticancer drug development, Biochemistry (Medicinal plant), Cellular and molecular biology, Food - Nutrition	Female	Biotechnology and Food Technology	Applied Sciences
Otieno	FAO	Prof	C1	Environmental modelling, Integrated water resources management, Civil engineering, Water pollution, Control of water treatment, Applied environmental science	Male	**	**
Permaul	K	Prof	C3	Enzyme application in biocatalysis, Microbial enzymes, Directed evolution, Enzymes - Industrial application	Male	Biotechnology and Food Technology	Applied Sciences
Preece	J	Prof	B3	Education	Female	Faculty Office	Arts and Design
Puckree	T	Prof	C3	Health Sciences, Ethics, Health promotion and disease prevention	Female	Faculty Office	Health Sciences
Singh	S	Prof	C1	Environmental enzymology	Male	Faculty Office	Applied Sciences
Stenstrom	TA	Prof	B3	guideline development, Microbiological quality of water and wastewater; Water and Environmental Microbiology, health risk assessment	Male	Institute for Water and Wastewater Technology	Research & Postgraduate Support
Venugopala	K	Dr	YI	Antimicrobial screening, Pharmaceutical sciences, Antimalarial compounds, Antituberculosis drugs, X-ray crystallography, Anticancer plant products, Antimicrobial peptides, Isolation and structural elucidation, Antioxidants	Male	Biotechnology and Food Technology	Applied Sciences

Surname	Init	Title	Rating	Research Specialisation	Gender	Department	Faculty
Zloschastiev	KG	Dr	C3	Superfluidity, Gravitation, Quantum physics, Degenerate quantum gases, Open quantum systems, Quantum field theory, Elementary particles, Cosmology, Differential equations, Nonlinear and complex systems	Male	Institute of Systems Science	Research & Postgraduate Support



UNIVERSITY RESEARCH AWARDS 2014

The Vice-Chancellor's office and the Directorate for Research and Postgraduate Support hosted the Annual Research Awards ceremony. The purpose of the event is to honour excellence in research at the DUT. VIP guests for the ceremony included Professor Michael Chapman and Professor Umesh Laloo, Vice Chancellor and Principal – Professor Ahmed Bawa, Colleagues from Human Science Research Council (HSRC), University of Kwa-Zulu Natal (UKZN), Centre for the Advancement of Science and Mathematics Education (CASME), Municipal Institute of Learning (MILE) Research and Postgraduate Director – Prof Sibu Moyo, Dr Martin Mandew – Director: PMB Campus and among others, including nominees, researchers and support staff.

Top University Publishers 2013 - these researchers produced 2 units and above for DHET accredited publications.

Professor F Bux	6.38
Professor JP Govender	4.66
Professor B Odhav	4.50
Professor N Dorasamy	4.50
Professor N Sibiya	2.91
Professor R Rampersad	2.50
Professor N Deenadayalu	2.05
Dr OA Ijabadeniyi	2.00
Bhagwan R	2.00
Van De Merwe A	2.00

Top University Publishers (Postdoctoral Fellows, Research Associates, and Research Fellows) 2013 - these researchers produced 3 or more DHET accredited publications.

Dr Katharigatta N Venugopala: Postdoctoral Fellow (Biotechnology and Food Technology - Applied Sciences)

Dr Parvesh Singh: Research Fellow (Chemistry-Applied Science)

Dr Indra Bahadur : Research Fellow (Chemistry-Applied Science)

Dr Sheena S Kumari: Research Associate (Institute for Water and Wastewater Technology)

Dr Turup Pandurangand Mohan: Research Fellow (Mechanical Engineering – Engineering & the Built Environment)

Chalannavar RK: Postdoctoral Fellow (Biotechnology and Food Technology - Applied Sciences)

Recognition of DUT Rated Professors (New Ratings for 2014)

Professor TA Stenstrom

B Rating

Professor M Marks

B Rating

Professor T Meyiwa

C Rating

Top Research Group of the Year Award

In this category, the research group was required to show evidence of making a significant contribution to its field of study and to consist of academic and support staff members at the university, have at least five (5) members and have published a minimum of at least six units in the reporting year. (This included authors units and student units if co-published.)

Professor F Bux and the SARChI Chair Professor TA Stenstrom were the recipients of this award.

Top University Woman Researcher:

In this category the researcher had to have shown evidence of making a significant contribution to her field of study. The individual must be an Academic/academic support staff member at the University, currently involved in research and/or creative productivity and a minimum of 3 units of DHET subsidy for award.

Professor N Sibiya was the awardee.

Top University Senior Researcher Award: This researcher demonstrated commendable performance and achievements, providing significant value to the University, as well as demonstrating evidence of making a significant contribution to the relevant field of study on a national/international platform. The impact of research is considerable. The individual was an Academic/ academic support staff member at the University, currently conducting research and/or creative productivity and had a minimum of 4 units of DHET subsidy for the award year.

Professor N Dorasamy was the awardee.

Top Researcher in Each Faculty: In this category the researcher must be an academic staff member at the University, currently conducting research and/or creative productivity and must have published a minimum of 1.5 units of DHET publication subsidy for award. This category has winners in three faculties:

- (i) Faculty of Engineering and the Built Environment - Professor K (Mervyn) Kanny (1.83)
- (ii) Faculty of Health Sciences – Professor Prof N Sibiya (3.24)
- (iii) Faculty of Management Sciences - Professor N Dorasamy (4.50)

MTech Student of the Year Award: in this category the student must be currently studying towards their Masters and be involved in research and/or creative work and have published 0.5 units of DHET accredited journals/ accredited output before the nomination.

Mr E Adewumi was the awardee

DTech Student of the Year Award: in this category the student must be a full-time student studying towards their doctorate and should have registered for their programme at DUT for at least a year before the nomination. The applicant should be conducting research and/or creative productivity and should not be a staff member at the time of nomination. The applicant should have published at least 1 accredited publication unit before nomination.

Mr Ivan Skoryk was the awardee

Top DTech Student per Faculty Awards: in this category the student must be currently studying towards a DTech & Involved in Research and/or creative work and have published at least 0.50 accredited publication unit. This category has winners in two categories

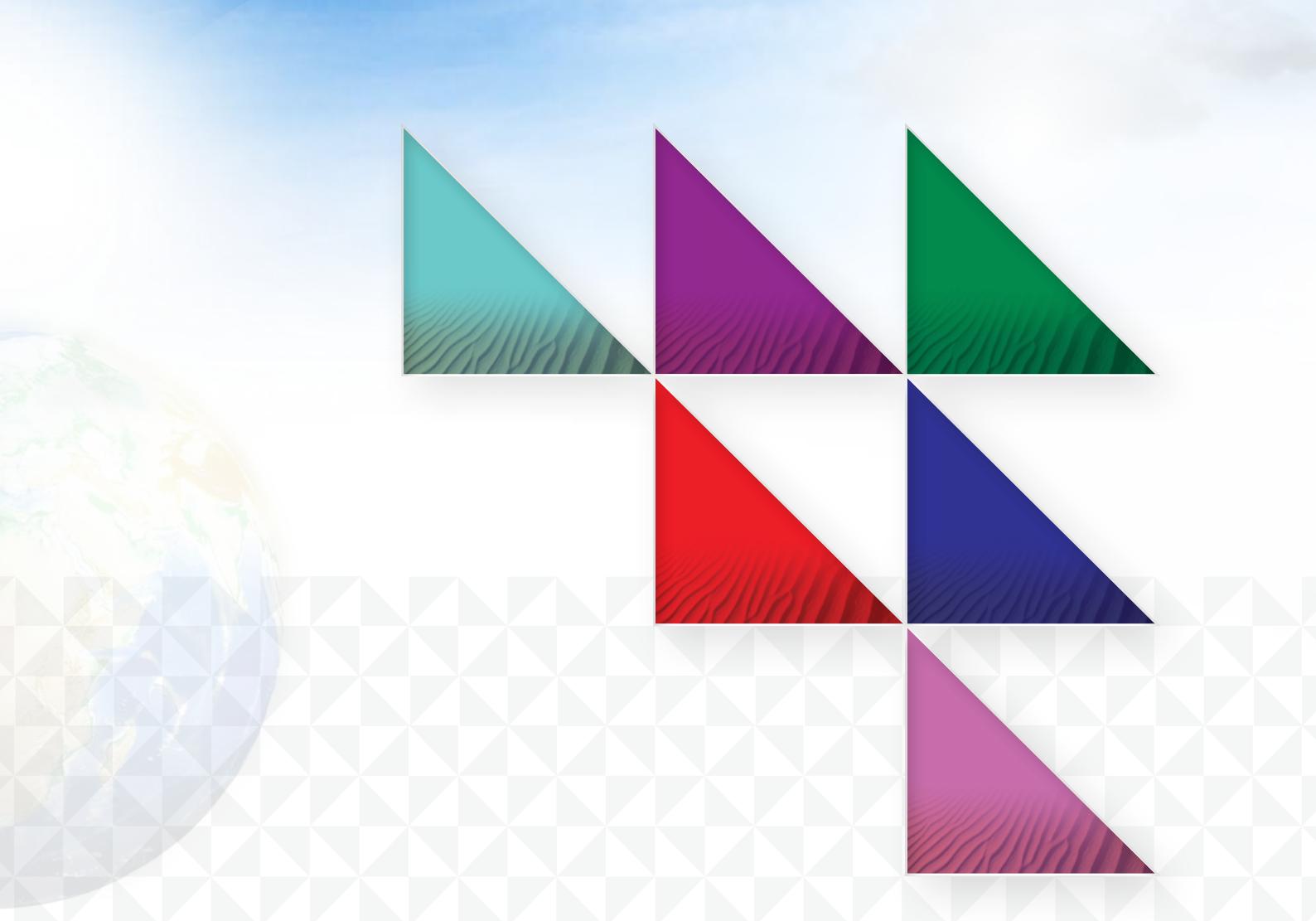
- i. Faculty of Engineering and the Built Environment - Mr Oluwatosin Olofinjotoye (0.50)
- ii. Institute for Water and Wastewater - Mr Ismail Rawat (0.50)

ASSOCIATE PROFESSORSHIPS AWARDED IN 2014

Professor AJ Adeyemo	Department of Civil Engineering and Surveying, Faculty of Engineering and the Built Environment
Professor P Reddy	Department of Community Health Studies, Faculty of Health Sciences
Professor R Balkaran	Faculty of Management Sciences
Professor VP Rawjee	Faculty of Management Sciences



ANNUAL RESEARCH AWARDS FUNCTION 2014



PROLIFIC RESEARCHERS



Professor Jamila K Adam

Department of Biomedical and Clinical Technology/Faculty of Health Sciences

Professor Adam is dynamically involved in research and academic activities in her department. She has more than 30 years of teaching and research experience in the area of Clinical intervention studies (Cardiology) and supervised students in the area of Immunology, Microbiology, Histology, Toxicology, Applied Physiology and nutrition in accomplishment for the award of D Tech and M Tech degrees. She has extensively published in local and International journals and serves on editorial committees of prestigious journals. To her research credit, Prof Adam's doctoral student received Patent for the

development of innovative technique in cardiovascular perfusion.

Professor Adam has obtained 13 national and international research awards. In 2012, she was awarded a Full Professorship at DUT and in 2012 received an International Research Fellowship Award from the Association of Biotechnology and Pharmacy (Fellowship of Association of Biotechnology and Pharmacy (FABAP) from India. Furthermore in 2013, she received the top University Woman Researcher of the Year Award (2012), the top faculty researcher year award (2012) and received an award for the highest number of publications (2012) at DUT.



Professor Dhiren Allopi

Department of Civil Engineering and Surveying Faculty of Engineering and the Built Environment

Professor Dhiren Allopi has over three decades of combined industrial and academic experience, mainly in the field of transportation and geotechnical engineering. His main areas of research include: Transportation planning, Traffic engineering, Geometric design, Earthworks design, Pavement design and management, Pavement materials, Transportation systems, Public transport, Engineering soils, Site investigation.

Professor Allopi's current research involves the design of a green township infrastructure toolkit. There is a growing

need for co-ordination of design, sustainability, economic and environmental aspects of infrastructure projects. The provision of civil infrastructure has a major impact on the natural environment and on the quality of life. The objectives of this research study were to identify green design technologies that can be used in township infrastructure and to enforce sustainable design on infrastructure township services, at the various stages of the project. This would require the development of a green reporting system that incorporate environmentally friendly infrastructure design solutions. Various case studies were

undertaken on a range of infrastructure projects to ensure consistency and reliability of the toolkit.

Professor Allopi research also involves the formulation of a statistically accurate gravel loss prediction model for marginal materials employed to surface gravel roads in the Iringa region, Tanzania. Among various gravel roads distress prediction models in existence, a gravel loss prediction model is considered critical in selecting the optimal re-gravelling schedule for effective maintenance management of gravel roads.

Local characteristics pose a challenge to existing international gravel loss prediction models when employed locally, resulting in an inaccurate prediction of gravel loss. Hence the need for a gravel loss prediction model to be formulated locally so as to address local characteristics influencing gravel roads deterioration. A detailed gravel roads condition survey was carried out. The measurement of gravel loss through the change in average height loss formed a crucial part of the study. The modelling of a gravel loss prediction model was performed using pavemetric principles. The results of the condition survey led to the formulation of a new range of grading coefficients to suit the local marginal materials. The gravel loss survey results assisted in establishing gravel loss thresholds. These thresholds

can be employed to enhance the quality control of gravel roads construction and maintenance practices.

The current research activities are undertaken while promoting doctoral research. To date Professor Allopi has been instrumental in graduating ten (10) postgraduate students. A further eight (8) MEng and three (3) DEng postgraduates are currently under his supervision. Professor Allopi has over 105 conference proceedings and journal papers to his credit. He received the Institute of Municipal Engineering of Southern Africa (IMESA) award twice for best paper in the Institute of Municipal Engineering of Southern Africa journal. Professor Allopi received the DUT Council Achievement Award in recognition of being an outstanding University Publisher in 2012. He also received the DUT Award in recognition of being one of the Prolific Supervisors in 2013. In 2014, the Transportation Division of the South African Institute of Civil Engineers (SAICE) presented Professor Allopi with an award in recognition of his long term contribution to the transportation engineering profession.



Professor Faizal Bux

Institute for Water and
Wastewater Technology

Professor Faizal Bux is the Director of the Institute for Water and Wastewater Technology. The Institute for Water and Wastewater Technology is recognized as a Centre of Excellence with emphasis on applied science. The research area focuses on developing and optimizing innovative and sustainable technology for the improvement of society. The approach is multi-disciplinary, combining the skills of biotechnology, chemistry, environmental health and various engineering disciplines to satisfy the much-needed water requirements. The core focus areas are wastewater technology, algal biotechnology and bioenergy production. There are various projects within each broad area. In general wastewater technology focuses on understanding and optimizing the mechanism of wastewater treatment in full scale wastewater treatment plants and constructed wetlands for the remediation of wastewater for environmental protection. This has recently grown to include the Anammox process. Algal biotechnology includes production of biomass, biofuels, high value products, mitigation of carbon dioxide and wastewater treatment. Bioenergy projects include the improved generation of biogas from UASB reactors treating brewery waste and biohydrogen production from sugarcane bagasse.

As a NRF B rated researcher, Bux has more than 20 years' service at higher education Institutes and has received numerous institutional awards including University Top Senior researcher award and NRF award. Professor Bux's primary research focus includes wastewater treatment, environmental biotechnology, algal biotechnology and biofuels production from waste substrates. He has supervised over 55 Masters and Doctoral students and 19 postdoctoral fellows served their tenure under

his guidance. He has acted/current editor for CLEAN Soil Air Water (John Wiley & sons, Germany), Environmental Science and Health Part A (Taylor Francis, USA), Biofuels research journal, Water Science and Technology and as a reviewer for over 45 international journals. He has contributed to more than 90 ISI journal articles, 8 book chapters and over 110 conference presentations (national and international) and the editing of 4 books. He has acted as project leader for ten Water Research Commission projects. Professor Bux has served as an invited Member of the Management Committee of the International Water Association (IWA) specialist group Microbial Ecology and Water Engineering (MEWE) and serves on the Executive committee of IWA-SA. He is a Fellow of the Water Institute of Southern Africa. He served on the scientific program committee/Advisory board/Chair/Invited speaker of various national and International conferences and is member of many professional bodies nationally and internationally. He serves as scientific advisor for many NGOs both in South Africa and internationally especially with regards to water quality issues. He established an extensive network of collaborators based at universities both nationally and internationally with active student and staff exchange for team members in the Institute. He is currently actively involved on bilateral projects with India, Brazil, Egypt, China, Algeria, Japan and global projects lead by Oklahoma University (USA) and Aalborg University (Denmark).

Professor Nirmala Dorasamy

Department of Public Management and Economics
Faculty of Management Sciences

Professor Dorasamy is Professor in the Department of Public Management and Economics. She lectures in the undergraduate and postgraduate programmes at DUT, Public Administration Leadership and Management Academy (PALAMA) and the Department of Defence.

The focus area of her research is ethics and public sector management, with an emphasis on enhancing the effectiveness and efficiency of public service delivery underpinned by a strong sense of governance within a democratic dispensation. Her international linkages involve collaborative research with the Swinburne University of Technology, Federation University and Monash University in Australia, and the American University in Cairo. The focus of this international collaboration is linked to governance, leadership excellence and ethical practices. She has successfully supervised and graduated twelve Masters and four Doctoral students. Professor

Dorasamy has developed resource material for the Department of Defence and Business Studies Unit at the DUT. She has co-authored textbooks for senior secondary learners and books for higher education purposes and she has published in local and international journals as well as presented papers at national and international conferences. She has been a

keynote speaker and session chair at the Rajiv Academy, India. Professor Dorasamy has also presented the conference communiqué for the African Association of Public Administration and Management (AAPAM).

In 2013, she was the recipient of the Top Researcher Award in the Faculty Management Sciences and was nominated for an academic development scholarship from Mendel University, Czech Republic. In 2014 she was the recipient of the Top University Senior Researcher Award and the Top Researcher Award in the Faculty Management Sciences.





Professor Krishnan (Mervyn) Kanny

Department of Mechanical Engineering
Faculty of Engineering and the Built Environment

Professor Kanny is a seasoned engineer and scientist with over twenty years research experience in advanced engineering materials systems. He has extensive experience in mechanical engineering product, process and system design including development, implementation and commissioning.

Over the last decade he has been researching composite and biocomposite materials systems for a range of applications including the automotive sector and the built environment. More recently he has

been processing and testing nano-infused structures for the aerospace, naval, and mass transit systems. His current work is at the nanometer scale length, where new functionalities and properties of matter are being harnessed for a broad range of applications.

Professor Kanny holds a PhD in Materials Science and Engineering (TU, Alabama, USA). He currently heads up the naNO Composites Research Group (nCRG). Under his stewardship the group has grown from strength to strength and he has managed to build an impressive infrastructure and research capability in a relatively short time. The nCRG is one of very few groups in the country that has capability in the trinity of design, materials and processing.



Professor Monique Marks

Urban Futures Centre

Professor Monique Marks' research focus is on urban safety. She has written extensively on security governance arrangements in an attempt to understand the complex inter-relationships between the state and the non-state in making urban spaces safer. She has a long track record of researching and writing about the policing of public order. As a result of this work, she worked closely with two of the legal teams involved in the Farlam Commission that was established after the Marikana 'massacre'. In the past two years, Prof. Marks has become increasingly interested in how urban design (particularly home boundary design) impacts on safety and fear of crime. She has been advocating the idea of 'cities without

walls' in collaboration with the public police and key private security agencies in Durban. At present she is also doing ethnographic research on the policing of drug addiction and drug use in Durban. Prof. Marks currently Heads the Urban Futures Centre at DUT and is an NRF B-rated researcher.

Professor Thenjiwe Meyiwa

Office of the Registrar

Professor Meyiwa is the Durban University of Technology Registrar and an honorary researcher in DUT's Faculty of Arts & Design. She is also an honorary professor with the University of KwaZulu-Natal's School of Social Sciences. Professor Meyiwa is a Fulbrighter and National Research Foundation (NRF) rated scholar, with extensive experience in higher education; as an administrator and a researcher.

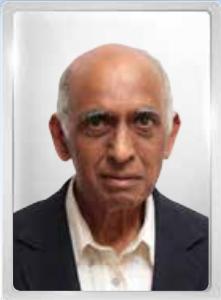
As a primary investigator of research projects, Professor Meyiwa leads rural-based research that seeks to promote the life of the rural school-going learners by employing innovative ideas that derive from their local environment. Under her leadership are three multi-year and externally-funded projects – all 'crowded-in' in a single rural school district of the Eastern Cape, in Cofimvaba. The main intention is to promote and strengthen learning, largely using the Cofimvaba community's indigenous knowledges, human resource as well as building on their environmental features. Professor Meyiwa is pursuing the publication of an isiXhosa language Maths dictionary for the primary school level, due to be published in 2015. The 'crowded-in' research projects that Professor Meyiwa has led since 2012 are funded by NRF and the Department of Science and Technology. The projects aim to transform

the experience and quality of education of rural learners through innovative research. Hence, change theory and participatory action research theoretical outlook are used as the key research approach. It is hoped that these projects are making a significant contribution towards realising the National Development Plan's 2030 educational imperatives for the rural learner.

Professor Meyiwa's research and mentorship record has a strong focus on social science research, with specific emphasis on social justice, gender & human rights pursuits. She defines her research work as being TRANSFORMATIVE in nature, as it is a multidisciplinary kind of scholarship which seeks to bring about change. Further, with colleagues from UKZN, Walter Sisulu University and DUT's Dr Delysia Timm, Professor Meyiwa is currently leading the Transformative Education/al Studies (TES) project. TES project participants are university educators from diverse academic and professional disciplines who conduct self-study research in a range of university contexts.

Within the above-listed subject fields and research interests, Professor Meyiwa has successfully graduated numerous Masters & PhD students, presented conference papers at national and international forums, as well as published extensively.





Professor Kandasamy Govindsamy Moodley

Department of Chemistry
Faculty of Applied Sciences

Professor Moodley's research group's activities are spread over three areas in order to accommodate students with divergent interests. The three areas are Organics in water in collaboration with Eskom; Synthesis and applications of ionic liquids as 'green' solvents and Synthesis of bio fuels from non-food biomasses

The research focused on the role of ionic liquids in waste beneficiation and recycling. A brief description of work done on waste from a paint manufacturing process will illustrate the scope of this approach. The manufacture of oil paints results in waste containing spent organic solvents and unused pigments.

We have recovered the organic solvents by distillation and have used ionic liquids to selectively extract the organic solvents (from the distillate) which can be reused in the paint manufacturing process. Since the ionic liquids have low volatility they do not pollute the environment with their vapours. They are thus regarded as 'green solvents'. In addition they can be easily recovered from the extraction mixtures and reused. Overall this project shows that 'waste' from many industrial processes can form the basis of SMMEs set up to recover resources from 'waste'. These types of projects have great potential to reduce pollution, conserve material resources and create employment.

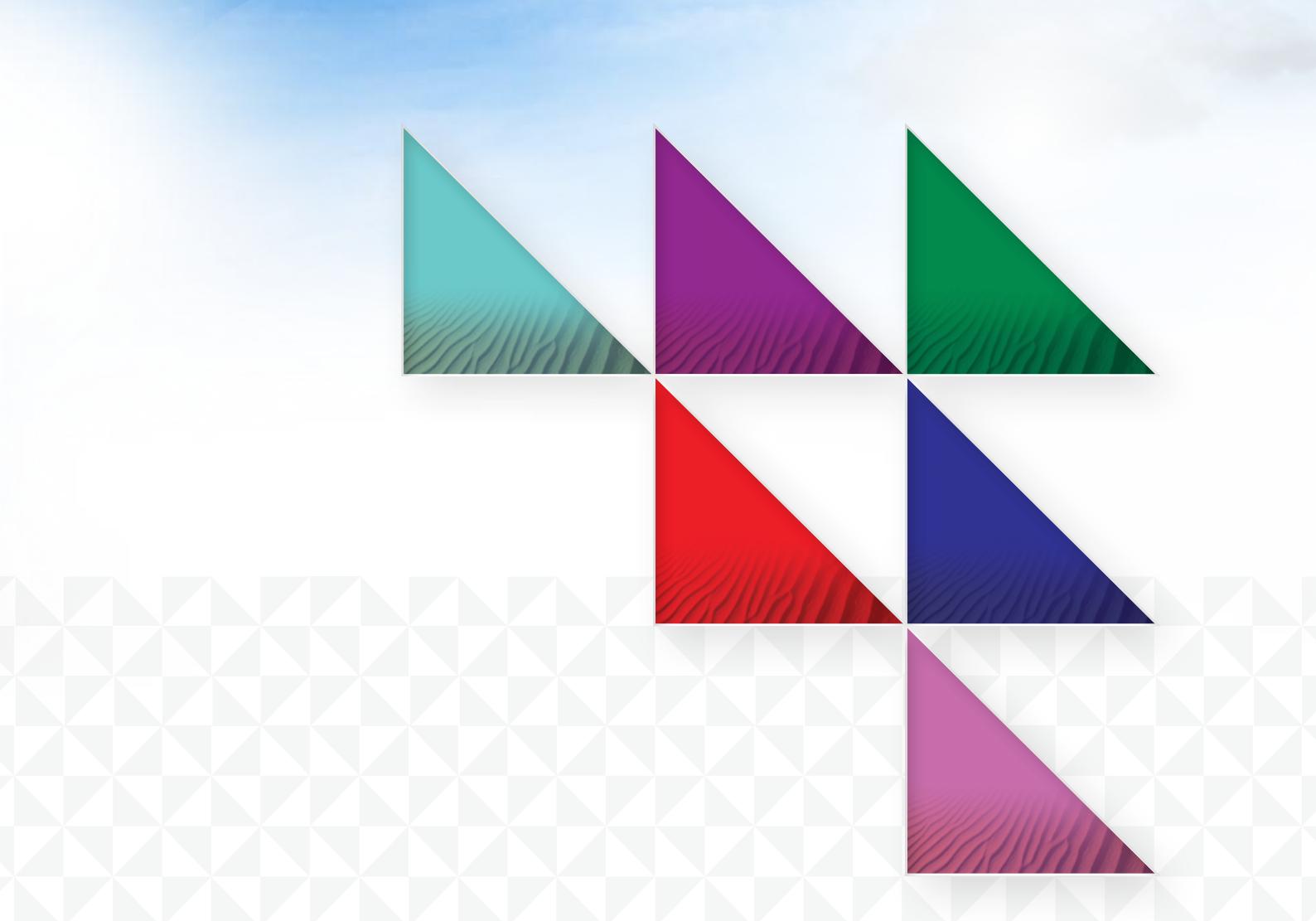


Professor Nokuthula Sibiya

Department: Nursing
Faculty of Health Sciences

Professor Sibiya is currently the Head of Department of Nursing. In 2014, Professor Sibiya conducted an independent research study on interdisciplinary postgraduate supervision: experiences of supervisors and students. Out of this study, she submitted two papers to the accredited journals for possible publication. In 2014, she successfully supervised eight master's students. She co-published three articles with her postgraduate students. Professor Sibiya received the following awards: 2013 Top DUT Female Researcher of the Year,

2013 Top Researcher in the Faculty of Health Sciences Award as well as the 2013 Council Award for Most Productive Researchers per Field (Department of Nursing, Faculty of Health Sciences).



EMERGING RESEARCHERS



Dr Sujit Kumar Basak

Department of Information Technology
Faculty of Accounting and Informatics

Dr. Sujit Kumar Basak's research interests focus on the impact of ICT on academic workload and productivity, social-critical approach of ICT in education, impact of reference management software on research workload and productivity, and technology integration into teaching and learning. He has published 17 articles in peer reviewed international journal and 8 articles in peer reviewed international conference proceedings.



Dr Nsizwazikhona Simon Chili

Department of Ecotourism
Faculty of Management Sciences

Dr Chili's research area is on township tourism in South Africa. This tourism niche has improved and grown in popularity since 1994 and is considered by various social agents, including the government, to be an appropriate opportunity for small businesses and the stimulation of local economic development for township residents. Dr Chili attended and presented one of the two papers to be published soon in an international conference held in June 6/7 2015 at Shinawatra University,

Bangkok, Thailand (International Foundation For Research and Development (IFRD) where he also served as a session chair. In his presentation, he argued that the role of tourism in the townships can only be achieved if the present government plays a leading and pivotal role by making townships safe destinations for all racial groups who still perceive them as no go areas. He is presently supervising masters and PhD students in his department/Faculty.

Dr Corné Meintjes

Department of Marketing and Retail Management Faculty of Management Sciences

Dr Meintjes is currently Senior Lecturer in the Department of Marketing and Retail Management and holds DCom from the University of Pretoria. The focus of her doctoral research was on understanding stakeholder relationship management based on the guidelines provided by the King III Report on Governance of South Africa. This research incorporated understanding global trends in governance related to stakeholder management as well as the practices of top South African companies.

However, Dr Meintjes' research interest varies and include working with local and international partners on topics such as co-creation of the South African brand during the 2010 Soccer World Cup, experiential learning at South African universities, the evaluation of webpages in the South African

lodges industry, and the advancement and professionalization of public relations as sub-discipline of marketing internationally and in South Africa.

From these projects, Dr Meintjes has presented papers at several local and international conferences and published widely in local, international and industry media. A major research project she was involved with was the Corporate Communication International South African Benchmark Study. This study formed part of a series of studies conducted across the world and conducted in consultation with the City University of New York. The results were presented to industry and several other forums. Due to this research impacting industry, Dr Meintjes has been involved extensively with industry through the judging of professional industry awards including the MPASA PICA awards for magazine publishing in South Africa, the IABC Quill awards and the PRISA Prism awards over a number of years.



Dr Respect Mondli Miya

Department of Nursing
Faculty of Health Sciences

Dr RM Miya offers a phenomenological exploration of the range of barriers and motivating factors as they relate to male involvement in the prevention of mother to child transmission (PMTCT) as a way of data, he developed a theoretical model to

facilitate gender-inclusiveness in PMTCT as a way of facilitating more holistic care to HIV infected pregnant mothers. This model is the first of its kind and makes a unique contribution towards gender-inclusiveness in the PMTCT in the management of HIV/AIDS during pregnancy.





Dr Julian David Pillay

Department of Basic Medical Sciences
Faculty of Health Sciences

Dr Pillay is a Senior Lecturer in Department of Basic Medical Sciences. His area of research centres round physical activity and public health, using pedometers (step-counters) as a tool in establishing patterns of physical activity in adults. Thus far, 12 papers related to his research have been published in international peer-reviewed journals. Through an NRF scholarship awarded in 2014, he has embarked on a large scale prevalence study on patterns of physical activity in the South African

employed population as well as a physical activity intervention-based randomised controlled trial. Dr Pillay provides mentorship and supervision to other post-graduate students embarking on research within the Faculty of Health Sciences. The theme "Steps that count!" is used as a pedometer-based physical activity and health promotion initiative and as a vehicle for community engagement and public health awareness.



Mr Felix Awung

Department of Media, Language and Communication
Faculty of Arts and Design

Mr Felix Awung holds an MA in Translation Studies from the University of Buea, and is currently working towards the completion of a PhD in the same discipline at the University of the Free State. Mr Awung's research interest is in the areas of translation, sociolinguistics and language teaching. He is particularly interested in research that focuses on the power relations in translation, translation for development, translation and minority language promotion, as well as the advancement of African indigenous languages for knowledge production. He has presented papers at local and international conferences, and published two articles in national and international journals. In 2014,

Mr Awung presented 3 papers at local and international conferences, and published an article on translation agency. He also started working on a collaborative project with a colleague from the National University of Lesotho on developing a trilingual Sesotho-English-French dictionary.

Mr Sean Jugmohan

Centre for Quality Promotions and
Enhancement
Faculty of Management Sciences

Mr Jugmohan's main research focus areas are in tourism curriculum development and in community-based tourism. The former aspects of research are directed towards alignment between industry and higher education keeping in mind employability of graduates. The community-based tourism research is directed towards facilitation and development of projects, with a focus on the pre-conditions required for the successful implementation of projects. Tourism graduates need to be educated to assist rural communities both to develop their tourism projects and to earn an

income in a sustainable manner. Far too often, government policy depends on non-renewable resources. A shift towards alternate income generation is necessary and sustainable tourism development shows promise.



Ms Emilie Joy Kistnasamy

Department of Community Health Studies
(Environmental Health)
Faculty of Health Sciences

Ms Kistnasamy's research for her doctoral studies is focussed on the role of three social determinants, viz. stress, social support and socio-economic position that may have given rise to unhealthy environments in which the risk factors for asthma may be clustered. Her study seeks to answer the following two research questions:

- 1) How do social determinants impact individually and collectively on the aggravation and management strategies of children with asthma?
- 2) Do social determinants modify the effect of ambient air pollution on asthma-

related outcomes among children?

It is imperative that comprehensive initiatives for the prevention and treatment of childhood asthma address the role of these non-clinical determinants on the causation and aggravation of asthma. This project is supported by the United States National Institute of Environmental Health Sciences.





Mr Lawrence Mzukisi Madikizela

Department of Chemistry
Faculty of Applied Sciences

Mr Madikizela's research is on the synthesis and characterization of a molecularly imprinted polymer (MIP). MIPs that are prepared in this study are being investigated as suitable sorbents for the adsorption and removal of non-steroidal anti-inflammatory drugs (NSAIDs) from various water matrices. In future, this research will be extended on other organic compounds and other applications for MIPs will be explored. The NSAIDs of interest are naproxen, ibuprofen and diclofenac. NSAIDs are well known organic pollutants that are

found in wastewater, rivers, dams and even drinking water. MIPs are synthesized, then characterization is performed using various analytical techniques such as NMR, IR, TGA, zeta potential, BET, etc. Recently, Density Functional Theory has been explored in order to understand the interactions that occur when NSAIDs are adsorbed on the surface of the polymers.

This research is currently funded by NRF Thuthuka grant (Unique Grant No. 93986) and is done in collaboration with Prof L Chimuka of Witwatersrand University. The other key members in the project are two BTech students and one Masters student. Lawrence Mzukisi Madikizela in HPLC Laboratory – Chemistry.



Ms Thembisile Gloria Mkhize

Department of Mathematics
Faculty of Applied Science

Ms Mkhize is currently a lecturer in the Department of Mathematics. She is studying towards a PhD in Applied Mathematics, under the supervision of Supervisors form the University of KwaZulu-Natal, Durban University of Technology and Suranaree University of Technology, Thailand. Her research interests focus on the intersection of group theory and probability theory. Her PhD research work is based on the study of systems of two second-order stochastic differential equations (SDEs).

SDEs include a stochastic component which describes the randomness within the differential equations. Thus SDEs have found many applications in areas

such as engineering, physics, finance and mathematical biology. SDEs in physics are known as Langevin equations. They describe the motion of a particle in a noise-perturbed force field, in particular harmonic oscillator. The Langevin equations are also encountered frequently in the theory of lasers, chemical kinetics and population dynamics. In finance SDEs serve as the basic tool for understanding and implementation of most important issues in interest rate modelling, and ultimately the analysis of inflation linked products.

Ms Avika Mungal

Department of Management Accounting
Faculty of Accounting and Informatics

Ms Mungal's research focuses on the impact of cash management on profitability and sustainability of small retail businesses in the Tongaat area, KwaZulu-Natal. Small businesses are vital for employment and job creation in South Africa. The implementation of sound cash management practices is essential to ensure profitability and sustainability of any successful business. The commonly used expression, "cash is king" cannot be contested as its validity was prevalent in this research study.

A recommendation that adds value to the study was to engage the final-year National Diploma: Cost and Management Accounting students in an integrated project, where they can provide cash management advice to these businesses. This will enhance the small businesses' knowledge of cash management and encourage implementation of these procedures to assist in increasing profitability and sustainability in their business.



Ms Yasmeen Thandar

Department of Basic Medical Sciences
Faculty of Health Sciences

Due to the chronic and unrelenting nature of atopic eczema and despite effective conventional therapies, complete clinical cure is unattainable, and patients are progressively exploring complementary and alternative medicines (CAM). The aim of my research is to study CAM usage in Durban with the following objectives:

To collectively evaluate all published systematic reviews to date on the most popular CAM modalities for AE, namely, Chinese herbal medicine, homeopathy, herbal medicines and dietary supplements for atopic eczema in order to provide objective information on their efficacy

and safety in light of the most recent findings. To conduct a systematic review of controlled trials with all topical herbal therapies for AE. To conduct a cross-sectional study amongst AE patients exploring the demographics of CAM users, extent and determinants of CAM use. To conduct a cross-sectional study surveying GPs, dermatologists, paediatricians and pharmacists exploring their knowledge, awareness of use, recommendations and attitudes on CAM use.





Ms Lee Scott

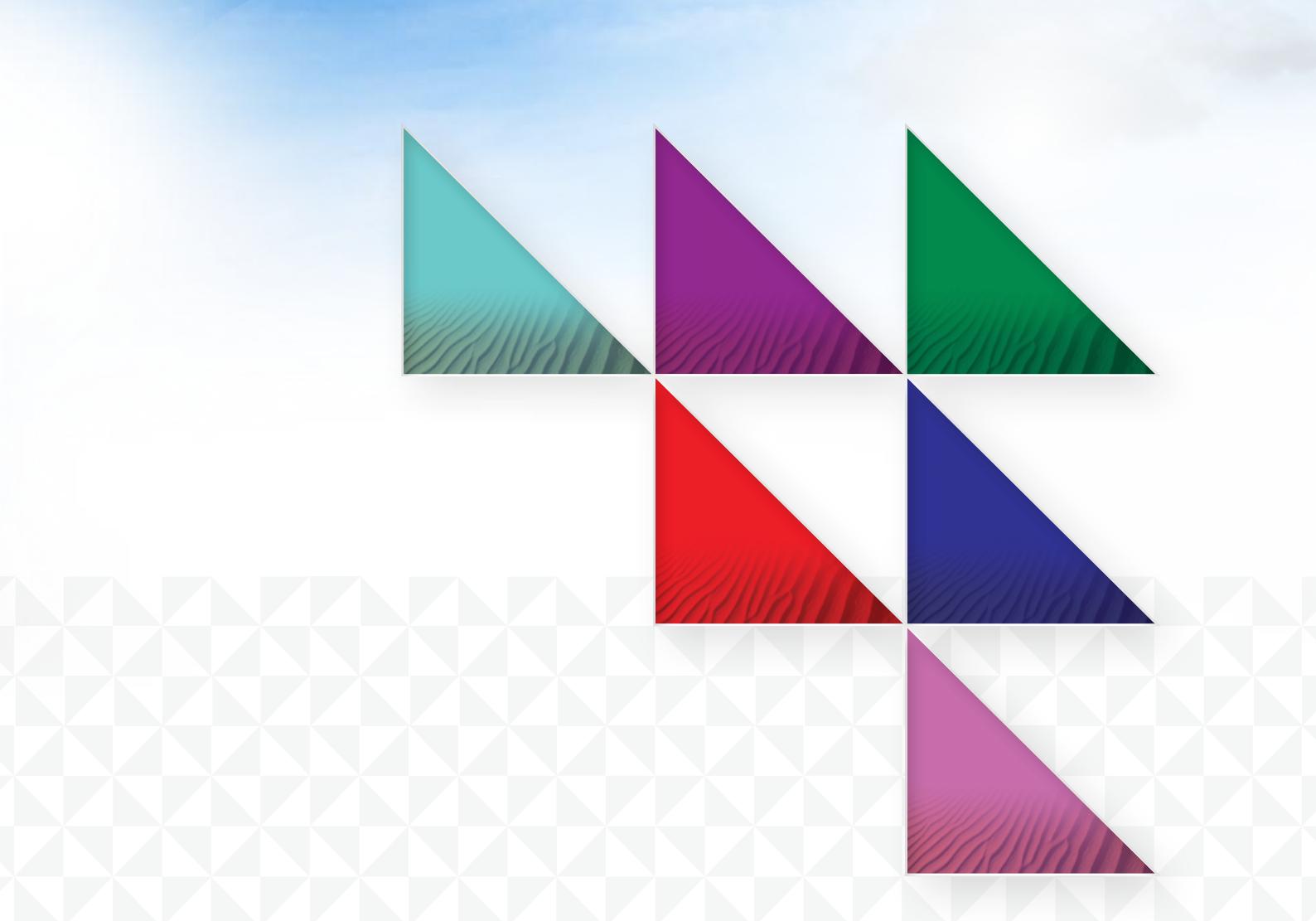
Department: Fashion and Textiles
Faculty: Arts and Design

Ms Scott's learning as an artist painter, researcher and teacher is multi-layered. By using action reflection cycles, Ms Scott has been able to critically reflect on her various practices, have seen the interconnectedness of her painting practice, with her teaching practice and been able to tell her story. Her methodology is a bricolage of action research, practice based research, reflective practice and is values driven.

Through self-study, Ms Scott embraces values associated with intuitiveness, wellbeing and autonomy as a part of the

evidence base for innovative teaching practice. The methods she uses are supported by image based approaches, such as demonstrations, one on one critiques and informal discussions with the students. She understands that her research is by no means finite, and by reflexively examining the evidence of her practice and notions of success, Ms Scott will continue to find innovative ways to teach.





**RESEARCH ASSOCIATES/
RESEARCH FELLOWS/
POSTDOCTORAL FELLOWS**



Dr Andrea Giampiccoli

Department of Hospitality and Tourism
Faculty of Management Sciences

Dr Giampiccoli's main field of research explores various aspects of community-based tourism (CBT) development. As a tourism strategy based on local community ownership, management and control, CBT works to develop local resources and capacities. CBT is specifically intended for disadvantaged and marginalized community members, therefore premised on ideals of poverty alleviation and social justice. In this context CBT is seen as a possible solution, when properly advanced, to enhance the local control of tourism development and

distribute its benefits to disadvantaged members in society. At the same time the management of local resources by local community members (that often depend on those same resources for their livelihood) could enhance the long term sustainability of such resources.



Dr Lawrence Mpele Lekhanya

Department of Public Management &
Economics
Faculty of Management Sciences

As DUT Research Associate, supervisor and post-graduate student mentor, Dr. Lawrence Lekhanya has been studying rural entrepreneurship and the role marketing plays within this environment. Dr Lekhanya has published more than 15 articles in accredited journals, advancing awareness on a range of themes including: green marketing and perceived marketing intelligence. His work highlights

present day challenges, as well as solutions, setting out the picture of what is happening 'on the ground', the field of Marketing from a rural SMME perspective. His research demonstrates that more investigation is required in these areas.

Dr Suvardhan Kanchi

Department of Chemistry
Faculty of Applied Science

Dr Kanchi's field of specialization is in separation and electro-analytical chemistry. The work includes capillary electrophoretic methods for the designing of novel and facile protocols for separating artificial and natural high intensity sweeteners in food samples. One research area is in evaluating adsorption capacity, kinetic, isothermal and surface morphological studies of the activated carbon prepared from the green vegetable waste materials for removal and

determination of inorganic species from wastewaters. Addition research involves the fabrication of high performance nano based electrochemical/biosensors. Electrochemical miniaturization techniques using screen printing electrodes for the detection of phenolic compounds in wastewaters and paints are currently the area of interest. With the advancement in the area of nanotechnology, research is focused on the green synthesis of nanoparticles from the plant materials. Also investigated are studies of the interaction of nanoparticles with the biological membranes and their cytotoxic effects.



Dr Enitan Abimbola Motunrayo

Institute of Water and Wastewater Technology

Dr Enitan Abimbola Motunrayo recently completed her PhD in Biotechnology and she is currently on a postdoctoral fellowship at the Institute of Water and Wastewater Technology. Her research centred on microbial analysis of environmental and food samples using advanced molecular techniques as well as bioreactor design, model development and optimization using evolutionary algorithms. She has developed a wide range of skills in elucidating the composition and structure of microbial community within wastewater treatment plants using imaging (Epifluorescence microscopy) and metagenomics techniques. Dr Enitan developed a kinetic model to optimize and increase biogas production

for energy generation using multi-objective evolutionary algorithms.

Current research is includes: determining the fate of emerging pathogenic bacteria in wastewater treatment plants and receiving freshwater bodies, and their public health implications, using advance molecular techniques; and, optimizing biogas production for energy generation using evolutionary algorithms.



Dr Enitan is involved in a number of collaborative research projects and co-supervision of students. She has published papers in several accredited journals and has published seven technical papers, three review articles and a book chapter. She has presented her research papers at several international and local conferences with several papers in conference proceedings.



Dr Venugopala K N

Department of Biotechnology and Food Technology
Faculty of Applied Sciences

There is a need for the discovery of more specific and selective anticancer agents to treat cancer. 5-Fluorouracil is one of the widely used anticancer drugs with pyrimidine nucleus. Based on the pharmacophore available in 5-Fluorouracil, we designed series of pyrimidine analogues, synthesized, characterized and tested for in-vitro 5-Lipoxygenase inhibition assay. 5-Lipoxygenase is an enzyme responsible for the metabolism of arachidonic acid to leukotrienes. The elevated levels of this enzyme and its metabolites in cancer cells

have a direct relation on the development of cancer when compared to normal cells. Molecular docking against lipoxygenase enzyme was done. The synthesized compounds were tested for their lipoxygenase inhibitory activity and found inhibition ranging from 59-81%. The activity was explained by a molecular docking study. The title compounds are also tested for anticancer activity against two human cancer cell lines MCF-7 and UACC-62 cell lines. The cytotoxic activity of compound 2,4-dimethoxybenzyl analogue in terms of IC₅₀ was $0.92 \pm 0.09 \mu\text{M}$ and $1.97 \pm 0.08 \mu\text{M}$ against MCF-7 and UACC-62, respectively.

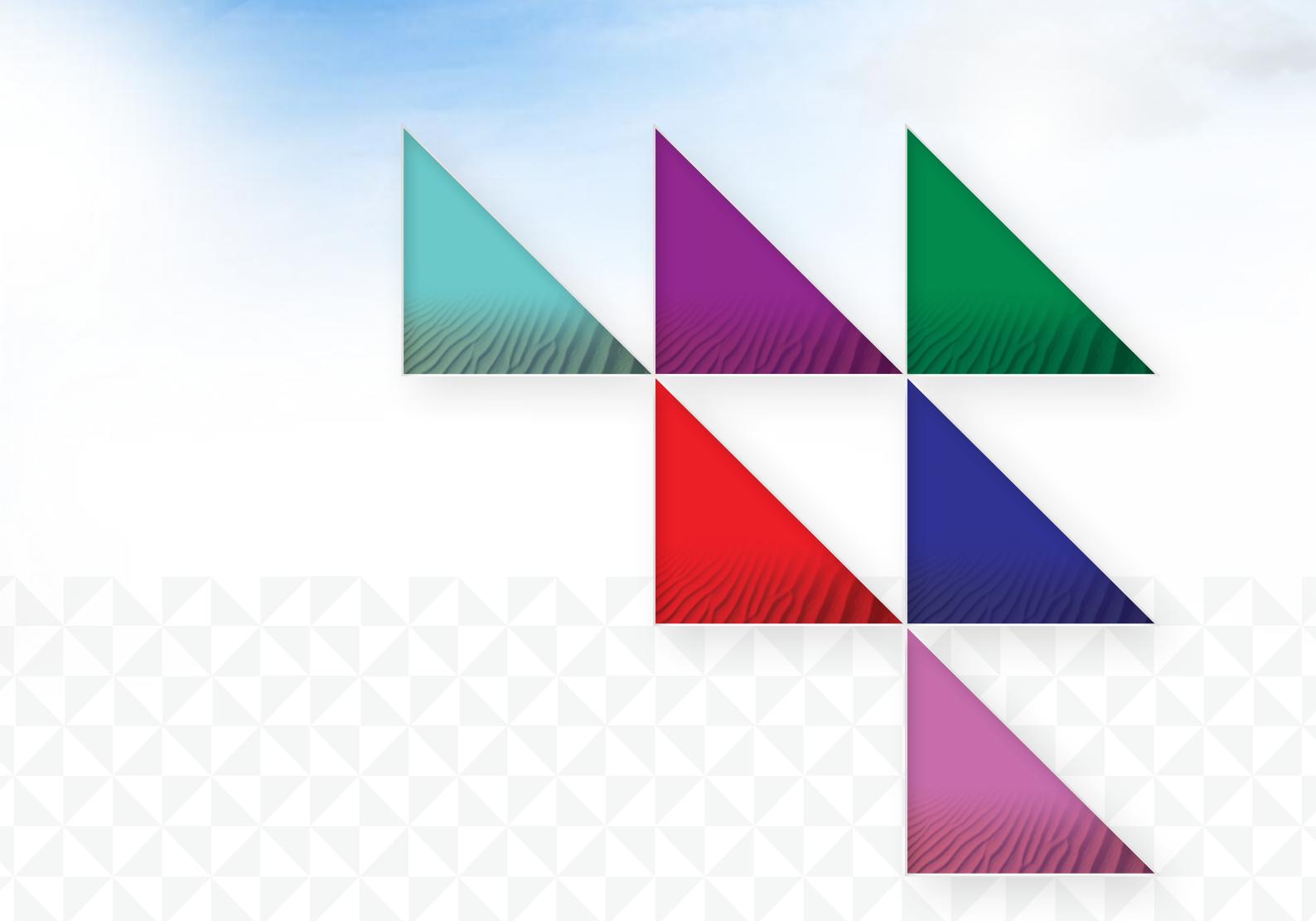


Dr Thembisa Waetjen

Honorary Research Fellow
Faculty of Arts and Design

As a historian, Dr Waetjen's published work is concerned with state and subject-making in South African political history, broadly defined. The aim is to provide a critical basis for understanding changes and continuities in social constructions of identities and how these challenge, or are incorporated into, structures of power. Most recently, this has produced the book *Schooling Muslims in South Africa: State, Identity, and the Orient* (UKZN Press, 2015) co-

authored with Goolam Vahed. Thembisa has recently turned her focus to social and political histories of opiate-based narcotics and addiction, particularly its articulations with medical body-politics and the making of race ideologies in the 20th century. This year, she has presented three conference papers in this new area, now under review as articles for high impact journals.



POSTGRADUATE RESEARCH

Mr Oluwole Adekanmbi

Department of Information Technology
Faculty of Accounting and Informatics

Supervisors: Professor Oludayo Olugbara and
Professor Josiah Adeyemo

DIFFERENTIAL EVOLUTION ALGORITHM FOR OPTIMAL STRATEGIC DECISION MAKING IN CROP FARMING SYSTEM

This research applies the differential evolution algorithm to support farmers with optimal strategic decision making in the crop planning system. The analysis and modelling of crop planning decision-making process helps clarify the crop plans and choices of farmers. The formalization of the decision making process is becoming a crucial focal point for developing decision support systems that can improve on prescriptive approaches. This research contributes to the development of a formalized methodology in studies decision in this field. The research reports the formulation of crop-mix planning problems by concurrently maximizing net profit and crop production, while minimizing the total land in hectare used to determine optimal cropping patterns. Different optimal crop-mix problems formulated in this research were solved using a mathematical methodology of generalized differential evolution 3 algorithm to obtain globally optimal solutions. The methodology of this research strikes a balance between mathematical formulations of

crop planning problems and effective implementation of crop planning decision models. Simulation experiments were conducted using the non-dominated sorted genetic algorithm II to validate the performance of the generalized differential evolution 3 algorithm for solving optimal crop planning problems. The empirical results of this study generally indicate that generalized differential evolution 3 algorithm is a viable alternative for optimal crop-mix planning decision. Based on the performance of the generalized differential evolution 3 algorithm, the design of a decision support system was realized which promises to assist farmers and decision-makers within the agricultural sector to make optimal decisions pertaining to crop planning.



Dr Micah Odhiambo Nyamita

Department of Public Management and Economics
Faculty of Management Sciences

Supervisors:

Dr Hari Lall Garbharran, Professor Nirmala Dorasamy

Dr Micah Odhiambo Nyamita has recently completed his full-time Public Management doctoral degree at Durban University of Technology. The title of his thesis is "Factors influencing debt financial and its effect on financial performance of state corporations in Kenya". Since, most state-owned corporations in Africa are being restructured or privatised, and their debt management has been identified as one of the limiting factors. Dr Nyamita's research work has focused more on public sector financial management, particularly in the area of the debt financing and its impact on financial performance of state-owned corporations. Dr Nyamita aspires to contribute towards fostering financial management teaching and research in both public and private sectors. Thus far, his research work has led to five publications and two conference presentations.

Dr Nyamita has also served as a part-time lecturer in the Department of Management Accounting and the Business Studies Unit within the University. Prior to his doctoral programme, he served at a private accounting university in Kenya (KCA University), rising from the level of Assistant Lecturer to the level of Deputy Centre Director in one of the main KCA University campuses. Dr Nyamita has been a Business Lecturer; specialising in the area of Financial Accounting, Management Accounting, financial management, taxation and auditing for Professional Examinations (CPA (K) and ACCA) and academic students, both at postgraduate and undergraduate levels for the last 10 years. He also served as a Part-time Lecturer for some Kenyan public universities, such as Maseno University, Jomo Kenyatta University of Technology, Bondo University of Technology and Baraton University of Eastern Africa-Rwanda.



WORLD CONGRESS OF CHIROPRACTIC STUDENTS (WCCS) 2014

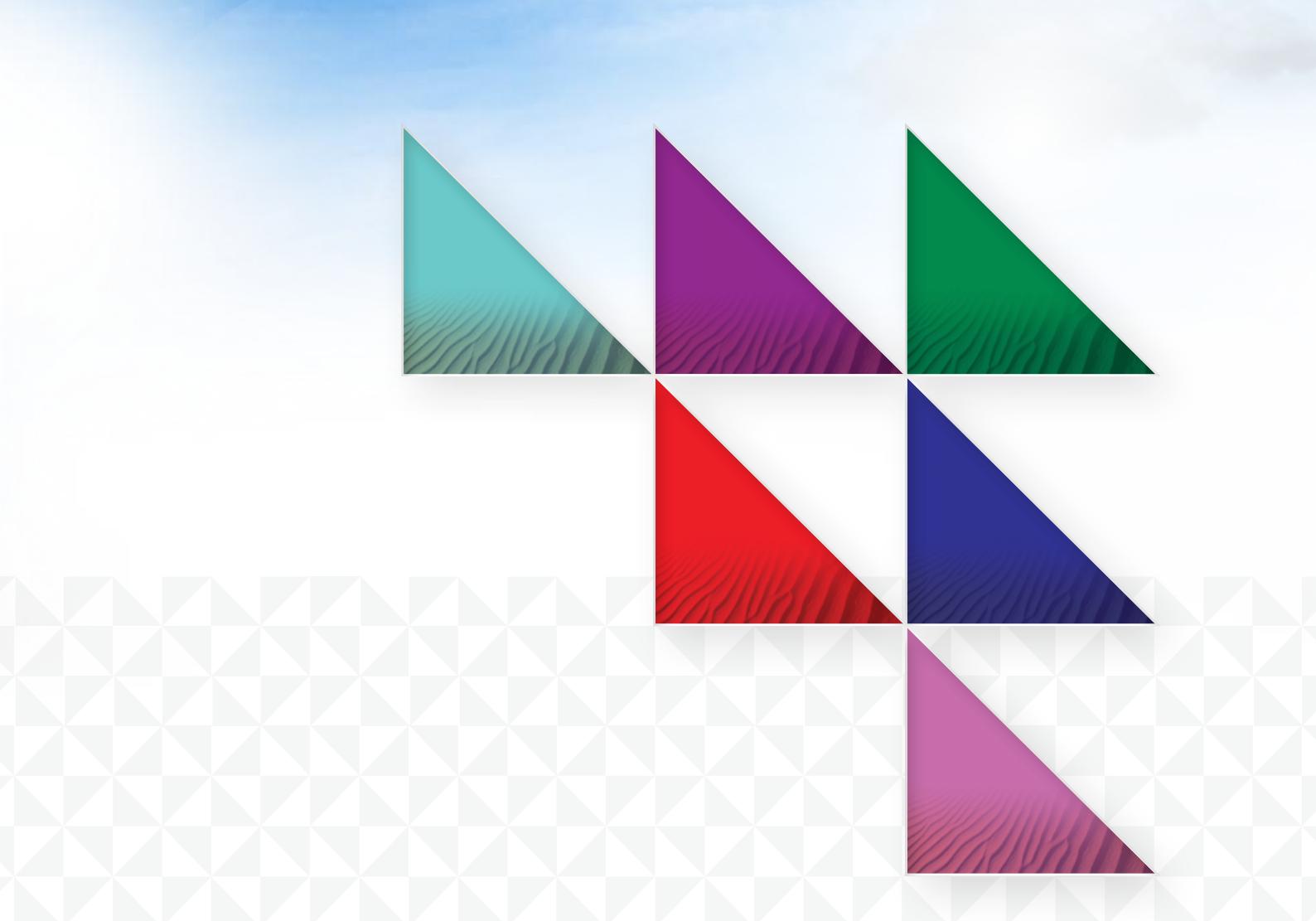
For the academic year 2014 the WCCS AGM was held in Malaga, Spain from 27 March - 2 April. The purpose of the World Congress of Chiropractic Students is to advance and unite the global chiropractic profession through inspiration, integrity and leadership. A delegation of eight students from the DUT attended the meeting. A highlight of this conference was DUT WCCS chapter's successful bid for the right to host the WCCS African Regional Event in 2015. The DUT WCCS chapter was excited to host this event and since this event is a huge opportunity for the University and was attended by delegates from all across South Africa.

At the Malaga meeting another exciting initiative called the Annual Collective Focus challenge emerged. The purpose of this challenge was for the global WCCS membership to become more involved in community-based projects, as well to promote the WCCS and chiropractics to the community. Since returning from the AGM, the DUT WCCS chapter had taken up the Annual Collective Focus challenge. Some of the community-based projects included: blood and bone marrow donor drives, clothing drives for an orphanage, an animal food initiatve to provide for an animal shelter; a yoga morning to celebrate World Spine Day and a golf day (with a portion of the funds raised being donated to the QuadPara Association of KZN).

WORLD CONGRESS OF CHIROPRACTIC STUDENTS (WCCS) 2015

For the academic year 2015 the WCCS AGM was held in Atlanta, USA. The WCCS-DUT Chapter sent six delegates to attend the meeting. An update on the progress of the planning for DUT's 2015 African Regional Event was presented at this meeting.

The DUT Chapter also created an International Observation Student Exchange Program in collaboration with other Chiropractic Colleges, and the aim is to have this program started by September 2015. This program will facilitate the exchange of DUT Chiropractic students with other international chiropractic students for two weeks at each other's colleges. Students will attend classes at the hosting institution and observe practical classes. The WCCS-DUT Chapter, additionally, drafted a letter in collaboration with other ECCE accredited Chiropractic colleges regarding the support for the inclusion of all European Schools onto the list of ECCE accredited colleges in an attempt to show our commitment to a unified profession.



MESSAGES FROM EXECUTIVE DEANS

FACULTY OF ACCOUNTING AND INFORMATICS

Mr Saleem Kharwa



Research within the Faculty is growing at a steady pace. During the 2014 academic year, a total of 10 students graduated with their Masters (8) and Doctorate (2) qualifications. It is noteworthy that 8 out of the 10 graduates were members of staff. The Faculty continued its resolve to:

- Improve its research profile;
- Develop staff capacity for research; and
- Enhance support structures for research.

The following initiatives were undertaken to assist with improving the research profile and capacity development of staff:

Visiting Professors / Scientists

The following senior academics were recruited by the Executive Dean to assist with supervision, support research, increase research outputs and various research related activities:

- Professor Lesley Stainbank, Accounting Educational Specialist from the University of KwaZulu-Natal
- Dr Jane Skinner, Education Specialist with a particular focus on Accounting Education from the University of KwaZulu-Natal

Postgraduate Research

Postgraduate research within the faculty also received numerous initiatives to support students on Masters and Doctoral qualifications.

Dr Jane Skinner and Professor Lesley Stainbank presented a series of interactive workshops. Topics included Supervision; Conceptualising a Research Topic; Proposal Writing; Research Methodology; Structuring and Literature Review; Conference presentations and Article Writing for publication in accredited journals. Arising from these workshops, there has been a steady increase in the number of publications in accredited journals by staff and students. There were 28 journal publications and 3 conference papers in 2014.

The Faculty is making remarkable progress as it focuses its activities around the development of researchers. The aim is to ensure that all teaching staff are encouraged to engage in research, especially for higher degree purposes. Staff are also encouraged to attend local and international conferences, which are supported through the DUT central conference funding, and to attend university-driven workshops that assist with capacity development.

FACULTY OF APPLIED SCIENCES

Professor Suren Singh



Preamble

The Faculty of Applied Sciences has significantly increased its research outputs for 2015. The Faculty identified research niche areas from the Departments of: Chemistry; Biotechnology; Food Technology; Physics, and Food and Nutrition. These research niche areas include but are not limited to: Computational Modelling in Chemistry, Organo – Nano Synthesis directed towards biological and catalytically application, Bio-Mass Processing, Enzyme Technology, Drug Recovery and Drug Development from Plants, Cloning and Expression of Enzymes, Food and Nutrition Security, Sustainable Energy, Grain Composition, Processing and Utilisation, Bioactive compounds in Foods, Nutraceuticals and Food Safety and Food Processing.

Faculty Research Strategy Workshop

The Faculty further embarked on a Faculty Research Strategy in order to establish a strategic research direction and to build capacity among Departments who were still novices in terms of building their research niche focus areas. The outcome of workshop yielded positive results by providing strategic direction for the Faculty in terms of research and allowing the Faculty to capitalise on their strengths and finding solutions to overcome their areas of weakness in terms of research.

Research Outputs 2015

The Faculty produced research outputs for the 2015 academic year as follows:

Number of Publications	49 (Submitted)	72 (Accepted)
Number of Conferences	5 (National)	16 (International)
Number of Postgrads - Graduated	11 (Masters)	7 (Doctorates)
Number of Postgrads - Registered	73 (Masters)	38 (Doctorates)
Number of Post Docs	14	
Number of Collaborations	38(National)	42 (International)

Visiting Professors/ Scientists

- Åsa Olsson LH Martin Institute, University of Melbourne presented a workshop on Developing and Sustaining a Robust Research Culture
- Dr Peter Biely, Institute of Chemistry, Slovak Academy of Sciences

Research highlights include:

- The Department of Biotechnology and Food Technology was awarded three of the four TIA Seed Fund projects, totaling approximately R1.3 million – specifically for commercialisation of research products. They were awarded to Prof K Permaul, Prof F Bux and Dr E Amonsou.
- Dr Nokuthula Mchunu was selected to attend a mentoring workshop in the USA by Ms Elisabeth Freeman, President and CEO of ICPD, California. Her chosen mentor, William Strohl (VP and Head, Biotechnology Center of Excellence at Janssen R&D, Johnson & Johnson), visited the Department in 2015. Dr Mchunu also received a EUROS A award for a research visit to the Department of Biotechnology, Lund University, Sweden.
- The Department of Biotechnology and Food Technology and DUT was awarded the status of: ARC Collaboration Centre. Funding of approximately R1 million was awarded primarily to the Food Technology Research Group in collaboration with the Enzyme Technology and Plant Biotechnology groups.
- The Enzyme Technology Research Group was selected as the applicant for the NRF Flagship Programme; Enzyme Technology Research Group has been awarded a new China-SA bilateral grant of approximately R500 000 for 2015-2017.
- Some postgraduate students obtained Bursaries from SAAFoST and NRF.
- Staff involvement in Child and Youth Care Centres managed by Child Welfare Durban and District (CWDD) offering ongoing consultation on menu planning, assessment of the nutritional status of the children, and training of staff in food preparation. This involvement started off as community work and turned into departmental research for Ms H Grobbelaar.
- Prof C Napier and Ms H Grobbelaar were involved in the development of South African Food Based Dietary Guidelines for the Elderly.
- Ms Astrid Badenhorst was the first staff member within the Horticulture Department to present a paper on a global platform when she attended the International Conference on Invasive Alien Species Management in Nepal. Ms Badenhorst represented not only DUT but also South Africa and the KZN Invasive Plant Forum at the conference.
- Mr Jonathan Foley presented a paper at the annual UKZN School of Humanities Student Conference and was awarded Best Abstract within the CCMS department.
- Mr Dhiren Govender presented a paper on the Demand Analysis for Horticulture in the Green Economy at the First International Conference, Journal of Green Economy & Development in Durban. He received the award for Best Poster Presentation.
- Ms Badenhorst also presented on Towards a Framework to Implement the NEM: Biodiversity Act at the JGED conference.
- Prof Krish Bharuth-Ram was awarded an NRF (CPRR) grant of R1.084 million in the Physics Department.
- The Department of Physics has a research partnership with the Institute of Solid State Physics at the University of Jena, Germany.
- A sun-tracker and weather station research equipment has been installed on the library rooftop as well as a 7.36 kW photovoltaic research facility. Data from these facilities is captured in our solar radiation data and monitoring laboratory for research purposes.

The Faculty of Applied Sciences will continue to push boundaries in terms of research and innovation with increased Research Activities planned for 2016.

FACULTY OF ARTS AND DESIGN

Dr Rene Alicia Smith



The Faculty of Arts and Design continues to be committed to developing research and supervision capacity, thus the Faculty worked towards improving the following key areas.

Staff Qualifications

During the Academic year 2014 the following staff members completed their postgraduate degrees:

Ms N Ngcongo (Masters) – Department of Drama and Production Studies

Dr V Reddy (Doctorate) – Department of Fashion and Textile

Dr J Roome (Doctorate) – Department of Fine Art and Jewellery Design

Funding was made available through the Teaching Development Grant (TDG) to support staff members engaged in higher degree studies.

Staff Research

The Faculty established the Research Task Team (RTT) in 2014 with the main aim to drive research within the Faculty. One of the main responsibilities of the RTT was to advocate the recognition of Creative Outputs at DUT. The RTT also worked with an external facilitator to develop a Faculty Research Methodology Course. The Faculty organised two Writing for Publication workshops, facilitated by Professor Labby Ramrathan from the University of Kwa-Zulu Natal and two inter-transdisciplinary (ITD) workshops. MISTRA facilitated the first ITD workshop and the Faculty was

responsible for the second one. Furthermore, four (4) Honorary Appointments were made to support research activities within the Faculty.

To further enhance research capacity the faculty hosted weekly research seminars which were presented by internal and external members. External members included Dr Maheshvari Naidu from UKZN and Mr Peter McKenzie, President of KZNSA. The Faculty has also organised a supervision workshop which was well-attended.

Research Recognition

Staff within the faculty were honoured and recognised at a Research Recognition Lunch.

Postgraduate Students

A total of forty-five (45) postgraduate students were enrolled in 2014. The Faculty graduated one (1) Doctoral student and ten (10) Master's students. With the support of the TDG, the Faculty started the process of developing its Research Methodology Course, to be offered to all registered students.

Future goals

The vision of the Faculty is to further engage in partnerships with academic, scholars and leading researchers within the Arts and Design discipline to support both its teaching and research activities.



FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Professor Theo Andrew

The Future of Research

Embedded in the university's strategic plan for 2015 – 2019 is a strong focus on research outputs. The research strategy is in line with the Faculty vision to be known for excellence in producing relevant professionals who use engineering, technology and design for societal development in South Africa. The Faculty mission is to foster research and development that contributes to the national and international pool of knowledge and which informs the undergraduate curriculum.

The focus of 2014 has been to provide an enabling environment to achieve the above objectives in the next five years. The Faculty committed itself to the following measures to increase research capacity;

- Postgraduate (PG) enrolments to increase by another percentage point over the next two years in those departments that offer MEng, MBE, DEng and PhD qualifications. The current faculty PG enrolment is approximately 1%.
- Preference will be given to applicants with doctorate degrees for all advertised academic positions.
- It is expected to have a total of about 75% of academics with Masters and Doctorate qualifications by the end of 2015.

Highlights of 2014

- Creation of the Urban Futures Centre (UFC) 'City without Walls'.
- First time access to research funding from the Research and Development Grant due to a team of researchers from the Chemical and Civil Engineering departments who have become members of the Institute of Water and Wastewater Technology.
- Allocation of research space for chemical engineering, UFC and the Built Environment.
- New Postgraduate qualifications leading to MEng, MBE, DEng and PhD qualifications. This is expected to lead to an increase in postgraduate enrolments from 2015. The main challenge is insufficient supervision capacity.
- Partnerships with universities in South Africa and abroad on special projects e.g. Stellenbosch, Cape Town, KwaZulu Natal, Koblenz (Germany), Poland, ENSAIT, ESTP, (France), China, India, USA, Canada, Australia (QUT) and Italy
- Partnerships with local and national agencies in South Africa on projects, e.g. EThekweni, KZN province, AMAFA, DST, CSIR, SKA, industry and State-owned enterprises.

FACULTY OF MANAGEMENT SCIENCES

Professor Rishi Balkaran



The Faculty of Management Sciences has adopted several key initiatives to enhance the research culture in the Faculty. This includes supporting postgraduate students and promoting postgraduate support through:

- Facilitating post-graduate entry through centralised postgraduate applications
- Formal student and staff workshops to assist with post graduate studies and research supervision
- Appointment of external academics to supervise post graduate students thereby promoting academic exchange
- Promoting pockets of excellence through the identification and the formation of research niche areas
- Building staff capacity through supervision training work shops
- Promoting multidisciplinary research by building synergies between various departments in the Faculty through cross and co-supervision supervision across departments, faculties and universities
- Using technology to bring postgraduate students closer to the learning experience through the creation of online classrooms.

Tremendous progress has been made with regard to staff qualifications, notably that the Faculty has exceeded the university target for 2015 by 12% for staff with doctorates. Research within the Faculty of Management Sciences is gaining momentum as evidenced in the increased publi-

cations in books and accredited journals; presentations at local and international conferences; launching of research projects and increased research collaboration through community engagement. Based on this, the Faculty produced the highest institutional research output in 2014. Using a student centredness approach underpinned by access and inclusivity, students are undergoing rigorous support from the Faculty to ensure success. A research centre, focusing on development and transformation is envisioned in the long term. This centre will serve as a platform to enhance research and will promote research on contemporary issues in the social, economic and political realm of post-apartheid South Africa.

MTECH AND DTECH GRADUATES 2014

FACULTY OF ACCOUNTING AND INFORMATICS			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Information Technology	Skoryk, Ivan	Radio and Satellite tracking and detecting systems for maritime application	Icev D; Olugbara OO
MTech: Cost and Management Accounting	Mungal, Avika	The impact of cash management on profitability and sustainability of small retail businesses in the Tongaat area, KwaZulu Natal	Garbharran HL
	Naicker, Melissa	The impact of the deferred tax adjustment on the economic value added measure for JSE listed producers and retailers in South Africa	Garbharran HL; Kharwa MSE
MTech: Information Technology	Adekanmbi, Oluwole Abayomi	Differential evolution algorithm for optimal strategic decision making in crop farming system	Olugbara OO; Adeyemo J
	Assensoh-Kodua, Akwesi	Factors that determine the continuance intention of people to use online social networks for business transactions	Olugbara OO
	Elujide, Israel Oludayo	Handover Scheme for Downlink Long Term Evolution	Olugbara OO; Nepal T; Owolawi PA
	Joseph, Seena	Development and validation of e-government readiness measurement framework	Olugbara OO
	Mukumbareza, Caroline	Evaluation citizen satisfaction of the quality of e-government information service provided by Southern African development community	Olugbara OO
	Reddy, Nerina	Perception and Expectation of IT services delivery post migration to a Microsoft platform at a university of technology in South Africa	Singh P; Petkov D
	Sosibo, Samantha Nokuthula	factors influencing users acceptance of online Encyclopaedias in the Arts and Humanities	Stewart G; Denny P

FACULTY OF APPLIED SCIENCES			
PROGRAMME	STUDENT	STUDENT	STUDENT
DTech: Biotechnology	Mchunu, Nokuthula Peace	Xylanase hyper-producer: Genome of the Thermophilic fungus <i>Thermomyceslanuginosus</i>	Permaul K, Singh S
DTech: Chemistry	Krishnan, Anand	Synthesis of bioactive nitrogen heterocycles and functional nanomaterials for biological and catalytic applications	Gengan RM; Chuturgoon AA
MTech: Biotechnology	Govender, Stephanie	Purification, application and immunolocalization of thermostable Xylanases	Singh S; Permaul K; Pillay SK
	Pillay, Preenan	Recovery of recombinant Insulin like growth factor-I produced as inclusion bodies during <i>E.colui</i> cultivation	Ramchuran S; S Singh
	Zhang , Meng	The chitinolytic enzyme system of the compost-dwelling thermophilic fungus <i>Thermomyces lanuginosus</i>	Singh S; Permaul K; Wang ZX
DTech: Food Technology	Obilana, Anthony Obafenmo Olusegun	Nutritional, physico-chemical and sensory characteristics of a pearl millet-based instant beverage powder	Odhav B
MTech: Biotechnology	Deepnarain, Nashia	Development and optimization of remedial measures to control filamentous bacteria in a full scale biological nutrient removal plant	Bux F; Santosh Kumar;SK
	Mogany ,Trisha	Optimization of culture conditions and extraction method for maximum phycocyanin production from a hypersalinecyanobacterium	Bux F
	Moodley, Nivrithi	Antimicrobial activity of ciprofloxacin – coated gold nanoparticles on selected pathogens	Odhav B
	Perumal ,Alicia Ann	Characterisation of biodiesel from Litseaglutinoso	Odhav B
MTech: Chemistry	Ramphal, Sayil Rohith	Analysis of selected organic pollutants in water using various concentration techniques.	Moodley KG; Chetty DK
MTech : Food and Nutrition	Nsele, Nelisiwe Queeneth	The effect of seasonal food variety and dietary diversity on the nutritional status of a rural community in KZN	Napier C
DTech: Biotechnology	Surujlal-Naicker, Swastika	Detection and evaluation of the state of Estrogen Endocrine Disrupting Chemical in Wastewater treatment	Bux F

FACULTY OF APPLIED SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Chemistry	Bipath, Nirvashini	Synthesis, spectroscopic properties and cytotoxicity of Boron-Dipyrromethene fluorescent dyes	Gengan RM; Chuturgoon AA
	Manhas, Neha	Computational studies of anti-cancer aurien peptides	Bisetty K
	Sobantu ,Pinkie	Development of methods for the separation and characterization of natural organic matter in dam water.	Moodley KG; Chetty DK
MTech: Food and Nutrition	Felt, Leigh	Food security and coping strategies of a rural community within the Valley of a Thousand Hills	Napier C; Kearney J

FACULTY OF ARTS AND DESIGN			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Fashion	Reddy Vasantha	Towards the development of an oral selection procedure for acceptance into the Fashion and Textile Programme at the Durban University of technology: Using life histories	Singh P
MTech: Fashion	Madubela,Thandiwe Elsie	A narrative self-study: How do I demonstrate my multi-cultural origins in my art of Fashion Design?	Scott LN; Conolly JL
MTech: Fashion	Kaplan,Yvonne	How do I use my living and lived experience in operating a fashion business to influence economic independence in others?	Kadwa F; Conolly JL
MTech: Fine Art	Norval,Anet	Autobiographical Narratives: An investigation into the artist as celebrity	Roome J; Peppas M
MTech: Graphic Design	De Beer,Anneli	An investigation of Images of Woman:The development of an awareness campaign to boost self-esteem amongst South African woman	Sutherland I
	Shange, Phumzile Jeanette	Talking Heads: An exploratory account of the experiences of Siyazama Craftswoman living with issues of culture, gender and HIV/ AIDS	Wells K; Andrew RC

FACULTY OF ARTS AND DESIGN			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Graphic Design	Somlenze, Mzomhle	The use of graphic design materials as a resource to address the issue of literacy acquisition in rural schools of the Eastern Cape	Pratt DD;Wells K
MTech: Language Practice	Reddy, Pregalathan	A learning object repository for computer assisted language learning in order to provide resources for language learners in schools in KwaZulu-Natal	Pratt DD; Gutteridge R

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Chemical Engineering	Cele, Mxolisi Norman	Development and evaluation of woven fabric immersed membrane bioreactor for treatment of domestic wastewater for reuse	Rathilal S; Pillay VL
	Chukwuka , Gabriel Arinze	Evaluation of batch Biodiesel options for Developing Economics	Pillay VL
	Toola, Maipato Immaculate	Performance characteristics for bio-ultrafiltration on local surface waters	Rathilal S; Pillay VL
	Xaba, Phakamani Comfort	Reclamation of end of pipe textile effluent using low energy membrane based processes	Rathilal S; Pillay VL
MTech: Civil Engineering	Adewumi, Emmanuel Olusegun	Determination of the most appropriate bus rapid transit system for the EThekweni Municipal area	Allopi D
	Moletsane, Moeletsi Augustinus	Crash modelling of a flight composite aircraft	Johnson JD
	Oyebode , Oluwaseun Kunle	Modelling streamflow responses to hydro-climatic variables in the upper Mkomazi River, South Africa	Adeyemo J; Otieno F
MTech: Industrial Engineering	Baraka, Jean Claude Munyaka	Modelling system for an effective humanitarian supply chain for disaster relief operations in the SADC region	Yadavalli S; Singh R

FACULTY OF HEALTH SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Radiography	Munsanje, Foster	Frontline radiographic human capital development - a case of Zambia and way forward	Gwele NS
	Adams, Justin Charles	A comparative analysis of six international chiropractic regulatory systems	Korporaal CM
	Coetzee, Cuan Wayne	An injury profile of Amateur and Semi-professional Kwazulu Natal triathletes	Korporaal CM; Haswell G
	Cuppusamy, Dillon	A systematic review to determine the evidence to support the use of flexion distraction Chiropractic technique	Korporaal CM; O'Connor L
	Gernetzky, Joshua	The effect of ac cooling cuff and moist ice pack on radial artery blood flow and lumen diameter	O'Connor L;Varatharajullu D
	Govender, Derusha	Racial variations of selected thoracic spine radiographic parameters of males in the greater Durban area	Shaik J
	Harris, Kelly Jayne	The definition of the current knowledge around evidence based conservation management of ITBFS: a systematic review	Korporaal CM; Harpham G
	Hitge, Candice Elaine	Patients at Marburg Haven Clinic: A demographic and disease profile	Ndlovu PZ; Korporaal CM
	Karim, Yumna	The effect of various pillow types on cervico-thoracic and forward head posture in young adults.	Shaik J
	Koenig, Jean-Pierre	The relationship between postural stability, sway, balance and injury in adolescent female soccer players in the eThekweni District of Kwazulu Natal.	Puckree T
MTech: Chiropractic	Allison, Kate Barbara	Associations between musculoskeletal injury and selected lower limb biomechanical measurements in female amateur ballet dancers	van der Meulan A

FACULTY OF HEALTH SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Chiropractic	Fogwell, William Peter	The effect of long axis manipulation of the third metacarpophalangeal joint on articular separation, peri-articular soft tissue movement and joint cavitation	Shaik J
	Jooste, Anneke	An investigation into normative values for the Functional Movement Screen (FMS) and its association to injury in female premier league hockey players in KwaZulu Natal	Gomes N; Korporaal CM
	Naidoo, Kerisha	A randomized clinical trial comparing the effect of two different durations of Muscle Energy Technique on neck pain, trigger points, range of motion and neck disability index	Korporaal CM
	Roopchand, Adelle Kemlall	A systematic review of the non-invasive therapeutic modalities in the treatment of myofascial pain and dysfunction.	Korporaal CM; Harpham G
	Stander, Barend Jacobus	An investigation into the prevalence and risk factors of occupation low back pain amongst commercial pilots registered with South Africa Civil Aviation Authority	Matkovich G
	Veerasamy, Seerouven Naiken	The effectiveness of dry needling versus Flurbiprofen LAT patch in the treatment of myofascial pain syndrome of the upper Trapeziun.	Korporaal CM; Thandar Y
MTech: Clinical Technology	Maree, Marilyn Jacqueline	The impact of dialysis therapy on metabolic syndrome traits at the Groote Schuur Hospital	Adam JK; Okpechi IG
	Singh, Kashka	Quality of life on nocturnal haemodialysis versus diurnal dialysis	Adam JK; Campbell DM
	Zondi, Minenile Promise Phamela	Corporate Social responsibility in the Dental Technology industry in KwaZulu Natal	Bass GH; Ross AHA

FACULTY OF MANAGEMENT SCIENCES

PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Emergency Medical Care	Newton, Paul Richard	An evaluation of the appropriateness of emergency medical services responses in the eThekweni District of Kwazulu Natal	Naidoo R; Brysiewicz P
MTech: Environmental Health	Rangeti, Innocent	Determinants of key drivers for potable water treatment cost in uMngeni Basin	Otieno F; Dzwairo B; Barrat GH
MTech: Homoeopathy	Ramnarayan, Sumir	A double blind placebo controlled homoeopathic proving of <i>Malus domestica</i> 30CH, with subsequent comparative analysis according to the Doctrine of Signatures.	Maharaj M; Somaru N
	Rohith, Suvishka	A comparative study of the knowledge, attitudes and perceptions of post graduate Homoeopathy and post basic Nursing students with regard to the adverse effect of vaccination in children.	Hall CM; Sibiya MN
MTech: Nursing	Cele, Reginah Jabulisile	Assessment of the use of the new maternity case record in improving the quality of ante natal care in eThekweni District, KwaZulu Natal	Sibiya MN; Ngxongo TSP
	Chandramohan, Sandhya	Spirituality and Spiritual care professional nurses at public hospitals in Kwazulu Natal	Bhagwan R
	Jacpasad, Neervani	The evaluation of integrated management of childhood illnesses training for learner nurses in KwaZulu Natal college of Nursing	Sibiya MN; Sokhela DG
	Kumalo, Babusisiwe	The relationship between work related musculoskeletal disorders, absenteeism and visits to the staff clinic by nurses in an eThekweni District hospital	Puckree T
	Langtree, Eleanor Margaret	Factors contributing to success in Anatomy and Physiology in first year students in the KZNCC nursing diploma program	Razak A; Haffejee F

FACULTY OF MANAGEMENT SCIENCES

PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Nursing	Maharaj, Sangeetha	The status of usage of information technology system within campus of the KwaZulu-Natal College Nursing	Puckree T; Mshunqane N
	Mahlanze, Hazel Thokozani	Evaluation of the use of guided reflective journals during clinical learning and practice by undergraduate nursing students at the Durban University of Technology	Govender S; Sibiya MN
	Manson, Theresa Anne	A relationship between matriculation English results and academic performance in nursing students at the KwaZulu Natal College of Nursing	Sibiya MN; Cruikshank G
	Mbangi, Ntombovuyo	Factors influencing high school learners to choosing nursing as a career	Sibiya MN; Pillay P
	Munsamy, Michelle	A clinical audit of the implementation of the Tuberculosis screening tool amongst clients who are anti-retroviral therapy in the eThekwi local municipality clinics	Botha I
	Pillay, Shamla	A descriptive study into the cold chain management of childhood vaccines by nurses in Primary Health Care clinics in the uMgungundlovu District	Botha I; Ngcono SD
	Singh, Reenadevi	A description of the utilisation of the partograph by midwives in the public hospitals in the Umgungundlovu District, KwaZulu-Natal	Prof MN Sibiya; Zondi ZM
	Sooruth, Umritha Raj	The use of Standard Treatment Guidelines and the Essential Medicines list by registered nurses at primary health care clinic in the Umgungundlovu District	Sibiya MN; Sokhela DG

FACULTY OF MANAGEMENT SCIENCES

PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Nursing	Subhan, Mary Shamane	Current pedagogical teaching strategies being used by educators at the KwaZulu -Natal College of Nursing campuses across varied subjects and their views regarding innovative methodologies	Bhagwan R
	Wirth, Janet Dorothy	An assessment of dietary diversity and nutrition knowledge of student nurses at KwaZulu-Natal College of Nursing	Orton P; Napier C
	Gqweta , Ntokozo	Knowledge, skills and perceptions of diagnostic radiographers on image interpretation of chest diseases in eThekweni	Naidoo S; Peer F
	Govender, Natalie	2D Brachytherapy Planning versus 3D brachytherapy Planning for patients with cervical cancer	Naidoo S; Govender P
MTech: Somatology	Rammanhor; Kiveshni	An analysis Somatology programme offered at South African Universities of Technology to determine whether it meets the needs of industry	Bhagwan R

FACULTY OF MANAGEMENT SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Business Administration	Chingwaru,Trymore	Impact of Trade And Economic Liberalisation Policy Reforms on The Operation of Selected Small to Medium Enterprises in Zimbabwe: A Benchmarking Study with South African Experiences	De Beer M Zondo RWD;
	Chule, Siyabonga Goodwill	Computations in Determining a Financial proxy which optimize de-trended stochastic asset prices under fixed-mix portfolio strategies	Moyo S; De Beer M
	Gumede-Hlengwa, Dumsile Cynthia	Challenges of working and studying at a satellite campus: a case study of the riverside campus of the Durban University of Technology	Dlamini Bl; Zondo RWD
	Smith, Carol	An analysis of tacit knowledge-sharing behaviour; within a social capital framework in a business environment of a south african university of technology	De Beer M; Mason RB
DTech: Public Management	Mabila, Ndiphethe Olive	Job Satisfaction in the Royal Swaziland Police Services: A Case Study of Manzini and Hhohho Regions	Dorasamy N; Wallis M
	Mathaba, Richard Siphamandla Ryan	External Whole School Evaluation of underperforming secondary schools in Mpumalanga Province	Dorasamy N; Parker K
	Ravu,Yagambram	Management of Skills Shortages within Eskom:A Case Study of Medupi Power Station	Parker KM; Reddy M
DTech: Operations and Quality Management	Rathilall, Raveen	A Lean Six Sigma Framework to Enhance the Competitiveness in selected Automotive Component Manufacturing Organisations	Singh S; Naidoo R
	Vahed, Anisa	Ensuring the Quality of Pedagogy through Games in Dental Technology at a selected University of Technology	Singh S; McKenna S

FACULTY OF MANAGEMENT SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Operations and Quality Management	Niranjan, Ivan	A study of co-exposure of chemicals and noise on hearing in the rubber industry	Wallis M
MTech: Business Administration	Dimaza, Goitsemang Rosemary	Promoting tourism in the south coast region of kwazulu natal through tour operators	Maharaj R; Docrat S
	Mhlongo, Patrick Mbongwa	The applicability of learning organisation philosophy for improving processes and practices in the universities of technology (uots) of Kwazulu-Natal	Zondo RWD; De Beer M
	Naaidoo, Anand	Factors sustaining and developing female entrepreneurs involve in the oil and energy sector within KwaZulu-Natal	Maharaj R; Chetty S
MTech: Hospitality and Tourism Management	Deen, Anisah	Customer satisfaction at a selected retail pharmacy chain in the great Durban area	Penceliah S; Noel DT
	Ijabadeniyi, Abosede	The influence of cultural diversity on marketing communication: A comparison of African and Indian in Durban	Govender JP; Veerasamy D
	Kamwendo, Andrew Roald	The effect of consumer ethnocentrism on the establishment wvof a consideration set of convenience products	Corbishley K; Mason RB
MTech: Marketing	Mbambo, Sbongiseni Nelson	Student expectations and perceptions about further education and training colleges with respect to college of choice in Kwazulu-Natal	Mason RB; Pillay MA
	Letooane, Mphe Kenneth	Factors impacting on the quality of work life: a case study of university "a"	Ngcamu BS; Dorasamy N
MTech: Public Relations Management	Kanny, Evashnie	The role of communication tools in shopping centre management within great Durban area	Rawjee VP; Docrat S
MTech: Operations and Quality Management	Doherty-Bigara, Francis Martin	The emergence of creativity and innovation from a quality perspective	Singh S; Naidoo R

DTECH AND MTECH GRADUATES 2015

FACULTY OF ACCOUNTING AND INFORMATICS			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Information Technology	Basak, Sujit Kumar	A Model Using ICT Adoption and Training to Improve the Research Productivity of Academics	Govender, DW & Obono, E
DTech: Information Technology	Singh, Alveen	Program management practices in Scrum: a case study of two South African software SMMEs	Sewchurran, K & Nepal, N
MTech: Commercial Administration	Ngibe, Musawenkosi	Staff and student perceptions of research structures and services provided by the faculty research offices at a University of Technology in South Africa	Skinner, J & Singh, P
MTech: Cost and Management Accounting	Doorasamy, Mishelle	Using Environmental Management Accounting to investigate benefits of cleaner production at a Paper Manufacturing company in Kwadakuza, KwaZulu-Natal: A case study	Garbharran, HL
MTech: Cost and Management Accounting	Nzuza, ZW	Factors affecting the success of inventory control in the Stores Division of the Thekwini Municipality, Durban: A case study	Garbharran, HL
MTech: Cost and Management Accounting	Sewnunain, Teshani	The impact of the National Credit Act, 2005 on the affordability of Home loans in Pinetown	Green, PE & Kharwa, S

FACULTY OF APPLIED SCIENCES

PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
Doctor of Philosophy: Biotechnology	Gulde, Abishek	Biodiesel production from microalgae by enzymatic transesterification.	Bux, F & Permaul, K
DTech: Biotechnology	Enitan, Abimbola	Microbial Community Analysis of UASB and application of an evolutionary algorithm to enhance wastewater treatment and biogas	Swalah, F Bux, F Adeyemo, J & Kumari, S.
Doctor of Philosophy: Biotechnology	Maduray, Kamini	In vitro photodynamic effect of gallium, indium and iron phthalocyanine chloride on different cancer cell lines	Odhav, B
DTech: Biotechnology	Obilana, Anthony Olusegun	Nutritional, physico-chemical and sensory characteristics of a pearl millet-based instant beverage powder.	Odhav, B
Doctor of Philosophy: Chemistry	Bathinapatla, Ayyappa	Development of electrophoretic and biosensor methods applied to high intensity sweeteners	Bisetty, K & Dovey, M
Doctor of Philosophy: Chemistry	Khan Faez Iqbal	Experimental and computational studies of a fungal chitinase	Singh, S & Permaul, K

FACULTY OF APPLIED SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
Doctor of Philosophy: Chemistry	Paul, Vimla	Synthesis and characterization of a biocomposite derived from banana plants (<i>Musa cavendish</i>)	Kanny, K & Redhi, GG
Doctor of Philosophy: Chemistry	Ramluckan, Krishnan	Development and optimization of technology for the extraction and conversion of microalgal lipids to biodiesel.	Bux, F & Moodley, KG
MTech: Biotechnology & Food Technology	Awobusuyi, Temitope Deborah	Quality and storage stability of Provitamin A Biofortified Amahewu, a non-alcoholic cereal beverage	Amsonsou, EO & Siwela, M
MTech: Biotechnology & Food Technology	Mnyandu, Elizabeth	Inactivation of <i>Listeria monocytogenes</i> ATCC 7644 on tomatoes using sodium dodecyl sulphate, levulinic acid and sodium hypochlorite solution.	Ijabadeniyi, OA & Singh, S
Master of Applied Science in Biotechnology	Gebashe, Cynthia Fikisile	Studies on the cryopreservation of shoot apices from recalcitrant-seeded <i>Trichilia emetica</i> Vahl. and <i>Trichilia dregeana</i> Sond.	Pammerter, NW & Makhathini, AP
Master of Applied Science in Biotechnology	Ramanna, Luveshan	Lab-scale assessment and adaptation of wastewater for cultivation of microalgal biomass for biodiesel production.	Bux, F
Master of Applied Science: Chemistry	Khulu, Sinegugu	Interaction studies of chiral Non-Steroidal Anti-Inflammatory Drug using HAS protein using capillary electrophoresis frontal analysis and electrokinetic chromatography.	Bisetty, K & Singh, P
MTech: Chemistry	Marume, Catherine	Elemental determination of lubricating grease using ICP-OES.	Redhi, GG & Govender, S
MTech: Food & Nutrition Consumer Science	Nzama, Phindile Favourite	Nutritional adequacy of menus offered to children 2 to 5 years old at registered childcare facilities in Inanda.	Napier, C
	Vermeer, Susan Inge	Impact of a nutrition education programme on the nutrition knowledge of Grade R learners in Durban	Napier, C & Oldewage-Theron, O
	Wilkinson, Jeanne	Comparison of a packed school lunches between boys and girls in primary schools in East London.	Napier, C & Makanjana, O

FACULTY OF ARTS AND DESIGN			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Language Practice	Bhoraat, Abdool Haq Mahomed	A curated online educational portal for staff and students at a University of Technology	Pratt, DD
MTech: Fashion & Textiles	Coetzee, Minette	Addressing the skills shortage in computer-aided design pattern-making in the KwaZulu-Natal clothing industry.	Pratt, DD
MTech: Fine Art & Jewellery Design	Baker, Siobhan Maire	Interpretation of the garden in the work of selected artists	Starkey, AR & Zulu SP
	Heath, Alistair Wray	Truth and entertainment: Historical film as a representation of the past in the work of selected filmmakers	Starkey, AR & Peppas, M
	Kempthorne, Adella Joan	The subversion of traditional porcelain in the work of selected artists (2000 - 2012)	Starkey, AR & Stewart, GDJ
	Maurel, Nicolé	An investigation into the interrogation of Afrikaner culture and identity in the work selected artist	Starkey, AR & Roome, JW
MTech: Visual Communication Design	Human, Nicolaas Cloete	An investigation into how creativity is maintained by graphic designers in a digital environment with specific reference to design practice	Andrew, R & Wells, CL

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Electronic Engineering	Callaghan, David James	Development of a two Element Correlating Radio Telescope Interferometer.	MacPherson, S & Sokoya, O
	Gumede, Makhosonke	In Service Condition Monitoring of polymer Housed Surge Arrestors within ETHEKWINI Electricity.	Rigby, B & D'Almaine, F
	Ingala, Dominique Guelord Kumampudu	Development of a Multi-Frequency interferometer telescope for radio Astronomy (MITRA).	MacPherson, S & Sokoya, O
	Kyereahene-Mensah, David Asare	A Machine Fault Diagnostics system based on the Artificial Immune Algorithm.	Govender, P

FACULTY OF HEALTH SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Chiropractic and Somatology	Booyens, Ryan Patrick	The short term efficacy of thoracic spinal manipulation on shoulder impingement syndrome	O'Connor, L
	D'hotman, De Villiers Jason	The perception, knowledge and utilisation of research and its role in the Chiropractic profession as determined by Chiropractors attending the World Federation of Chiropractic Biennial Conference 2013	O'Connor, L
	Gukelberger, Tessa Amy	A retrospective analysis of the clinical and radiographic data of patients with scoliosis presenting to King Dinizulu Hospital's Spinal Unit from 2008-2012	Sheik, J & Govender, S
	Jones, Kate Elizabeth	The effect of sacroiliac joint manipulation on lumbar extensor muscle endurance in asymptomatic individuals	O'Connor, L
	Matsebula, Lindelwe Nomsa	The effectiveness of lower thoracic spinal manipulation on lumbar extensor muscle endurance in asymptomatic males a placebo controlled study	O'Connor, L
	Mavimbela, Hloniphile Nokwazi	A randomised clinical trial comparing the effectiveness of two exercise programmes on core strength and balance in healthy females	Ndlovu, ZP
	Mthabela, Nosipho Pearl	The effect of bra size correction on selected postural parameters	Korporaal, CM
	Petzer, Justin Leigh	An investigation into the effectiveness of two different taping techniques in the treatment of plantar fasciitis	Matkovich, G
	Prince, Cleo Kirsty	The effect of three different cooling gels on acute non-specific low back pain	O'Connor, L & Gerber, D
	Reddy, Kimera	A comparative study of a novel and school issued backpack on high school adolescent posture at the New Forest High School in the eThekweni District of KwaZulu-Natal	Kretzmann, H & Maharaj, P

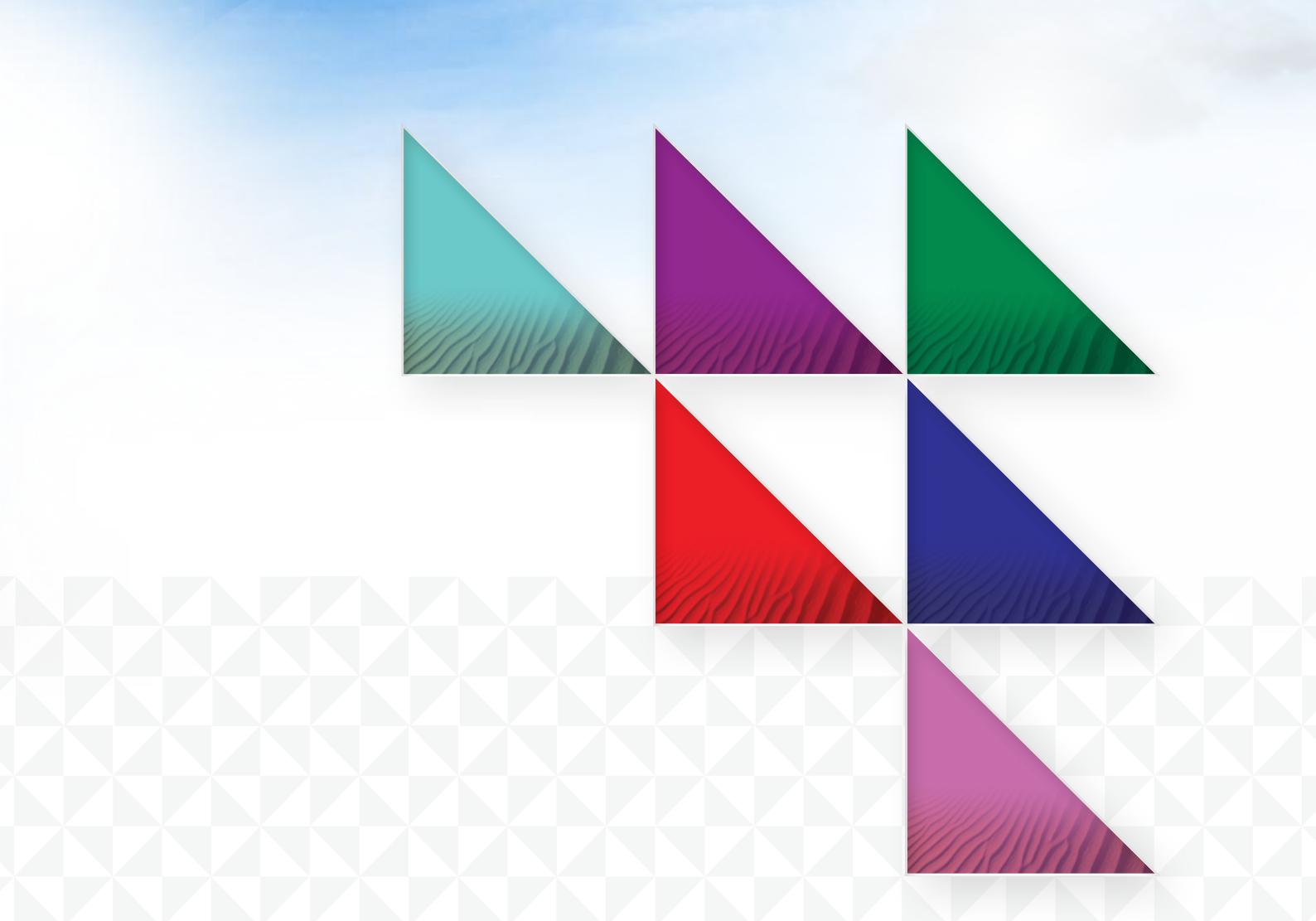
FACULTY OF HEALTH SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Chiropractic and Somatology	Rehman, Zia-Ul-Mustafa	The immediate effect of ipsilateral and contralateral sacroiliac joint manipulation on the hip range of motion and kicking velocity in soccer players	Kretzmann, H
	Sentsomedi, Keamogetse Refilwe	The epidemiology of injuries of female high school soccer players in the eThekweni district	Puckree, T & Kell, C
	Sweidan, Melanie Jill	A pilot study to determine the preliminary effects of spinal manipulative therapy on functional dyspepsia in adults	de Busser, N
	Thiel, Gregory Justin	The effectiveness of spinal manipulation at L3 on lumbar para spinal extensor muscle endurance in asymptomatic males	O'Connor, L
	Wiggett, Michael Alan	The immediate effect of spinal manipulative therapy on drag flicking performance of field hockey players	Kretzmann, H
MTech: Community Health Studies	Dalasile, Monica Ntombohlanga	Assessment of respiratory health risks associated with exposure to particulate matter (PM2.5) in informal waste pickers in a landfill site in KwaZulu-Natal	Reddy, P & Gumede, P
MTech: Emergency Medical Care & Rescue	Muhlbauer, Dagmar	An analysis of patients transported by a Private Helicopter Emergency Service within South Africa	Naidoo, R Hardcastle, TC & Adam, JK
MTech: Homeopathy	Dube, Nontobeko Sibusile	Patients' perceptions of their first Homeopathic consultation at Ukuba Nesibindi Homoeopathic Community Clinic	Sibiya, MN Ngobese-Ngubane, JC
	Naidoo, Kerusha	A homoeopathic drug proving of Panthera leo with a subsequent comparison to Lac leoninum	Naude, DF
	Peter, Clarissa	A homeopathic proving of the African lioness (Panthera leo) with a subsequent comparison with lion ethology	Naude, DF
	Phahamane, Peter Edward	A group analysis evaluation of the selected members of the acidum family of homeopathic remedies in terms of known Materia Medica	Steele, R & Maharaj, M

FACULTY OF HEALTH SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Homeopathy	Phahamane, Peter Edward	A group analysis evaluation of the selected members of the acidum family of homeopathic remedies in terms of known Materia Medica	Steele, R & Maharaj, M
MTech: Homeopathy	Watson, Tannith	A patient benefit and perception survey of the Durban University of Technology homoeopathic satellite clinic established at Ukuva Nesibindi	Naude, DF & Ngobese-Ngubane, JC
MTech: Nursing	Chonco, Nomfundzo Prudence Hedwig	Factors influencing the uptake of the revised expanded immunisation programme at Umlazi Township KwaZulu-Natal	Sibiya, MN & Ngxongo, TSP
	Joubert, Perrene Dale	An investigation into the roles of registered nurses and psychiatric nurses at in-patient psychiatric facilities, and its implication for nursing education in KwaZulu-Natal	Bhagwan, R
	Reddy, Noelene Belinda	Experiences of first-year student nurses nursing HIV and AIDS patients in the uMgungundlovu District	Razak, A & Pillay, P
	Xaba, Nompumelelo Pearl	The assessment of the facilitation of the clinical training component of an undergraduate nursing programme at a University of Technology	Adam, JK & Mkhize, B

FACULTY OF MANAGEMENT SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Entrepreneurial Studies & Mgmt	Mugari, Alpha	Supply chain integration with corporate strategy for selected companies in the fast moving consumer goods industry in KwaZulu-Natal, South Africa.	De Beer, M
DTech: Entrepreneurial Studies & Management	Nayager, Da Rathna Thavan	Causes of near miss and minor operation incidents at selected chemical organisation in Durban and their impact on key function.	De Beer, M

FACULTY OF MANAGEMENT SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
DTech: Public Management & Economics	Basabose, Jean De Dieu	Anti-Corruption education as a way of building positive peace in Rwanda.	Harris, GT
	Mugambi, Kenneth Majau	A Historical analysis of credit access to micro and small enterprises in Kenya.	Van der Merwe, A
	Ngwenya, Dumisani	Healing the wounds of Gukurandi: A participatory action research project	Harris, GT
	Nyamita, Micah Odhiambo	Factors influencing debt financial and its effect on financial performance of state corporations in Kenya.	Garbharran, HL & Dorasamy, N
	Irene Oseremen	Building infrastructures for peace: An Action research project in Nigeria.	Harris, GT
	Tsephe, Neo Puleng	Analysing rural Tourism motivation factors and ICT adoption with specific reference to Malealea lodge in Lesotho.	Mnguni, EM
MTech: Human Resource Management	Daweti, Baphiwe	Impact of mergers on lower level employees: A case study of the Durban University fTechnology merger.	Chetty, G
	Wisdom, Elizabeth Ann	The impact of e-marketing on business performance: A case study of the midlands meander association members.	Veerasamy, D
	Adjibi, Emile	Reconciling after genocide: Perceptions of Gacaca courts in three Rwanda communities.	Harris, GT
	Bakre, Rahman Olayemi	Water Resources Management for subsistence farming in Ward 19 of Kwazulu-Natal.	Dorasamy, N
	Gumede, Peggy Pinkie	The perceived quality of service in Public Clinics:The case of selected clinics in the Pietermaritzburg area	Dlamini, BI
	Ntemo, Kaimvangama Samba~	Key Indicators of Student Success at a Tertiary Institution: A case study of CIT Education Group's Accounting programmes	Van der Merwe, A

FACULTY OF MANAGEMENT SCIENCES			
PROGRAMME	STUDENT	PROJECT TITLE	SUPERVISORS
MTech: Public Management & Economics	Ntemo, Kaimvngama Samba-	Key Indicators of Student Success at a Tertiary Institution: A case study of CIT Education Group's Accounting programmes	Van der Merwe, A
MTech: Public Relations Management	Govender, Nishie Pramchund	The role of relationship marketing within the Durban University of Technology Alumni	Rawjee, VP
MTech: Public Relations Management	Govender, Vaneshree	The role of internal communication in the transition process at the Durban University of Technology.	Rampersad, R
MTech: Public Relations Management	Madikizela, Nonceba	Communication tools used to educate High School Learners about HIV/AIDS in the Mthatha area	Rawjee, VP
MTech: Public Relations Management	Nxumalo, Goodhope Singabakho	Public Relations Practices within selected Public Hospitals in Kwazulu-Natal.	Rawjee, VP
MTech: Operations & Quality Management	Jones, Bronwyn Gillian	Factors in postgraduate supervision that impact on the quality of research at a selected department at a University of Technology.	Korporaal, C



RESEARCH PUBLICATIONS

2014 and 2015 ACCREDITED JOURNALS

Faculty of Accounting and Informatics

Accredited Journal Articles 2014

Abe, B., Olugbara, O.O., Marwala, T. (2014). An investigation of generalized differential evolution metaheuristic for multi-objective optimal crop-mix planning decision. *Scientific World Journal*. 1-8.

Abe, B., Olugbara, O.O., Marwala, T. (2014). Experimental comparison of support vector machines with random forests for hyperspectral image land cover classification. *Journal of Earth System Science*. 123 (4), 779-790.

Basak, S.K. (2014). A comparison of university academics job factors: Satisfaction and Dissatisfaction. *Journal of Economics and Behavioral Studies*. 6(6), 500-508.

Green, P.E. (2014). Factors affecting the improvement of service quality at universities of technology: the case of South Africa, *Journal Of Economics and Behavioral Studies*. 6(12), 947-957.

Green, P.E. (2014). Prioritising factors service quality at Durban University of Technology: AHP approach. *Journal of Social Sciences*. 40 (2) 243-250.

Green, P.E. (2014). Service quality evaluation: A systems thinking approach. *Journal of Social Sciences*. 39(2), 169-177.

Kalema, B., Olugbara, O.O., Kekwaletswe, R. (2014). Identifying critical success factors: the case of ERP systems in Higher Education. *African Journal of Information Systems*. 6 (3), 64-84.

Mungal, A., & Garbharran, H.L. (2014). The perceptions of small businesses in the implementation of cash management techniques. *Journal of Economics and Behavioral Studies*. 6(1), 75-83.

Olugbara, O.O., Ndhlovu, B.M. (2014). Constructing frugal sales system for small enterprises. *African Journal of Information Systems*. 6(4), 120-139.

Skoryk, I. (2014). Zigbee at the heart of modern wireless network. *Electronics World*. 120 (1935), 36-37.

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Adekanmbi, O., & Green, P. (2014). Assessment Of User Authentication Risks In A Healthcare Knowledge Management System. *International Business & Economics Research Journal* (IBER), 14(1), 95-106.

Olugbara, O. O., Adetiba, E., & Oyewole, S. A. (2015). Pixel Intensity Clustering Algorithm for Multilevel Image Segmentation. *Mathematical Problems in Engineering*, 2015, 1-9.

Thakur, S., Adetiba, E., Olugbara, O.O. & Millham, R. (2015). Experimentation Using Short-Term Spectral Features for Secure Mobile Internet Voting Authentication. *Mathematical Problems in Engineering*. 2015, 1-21.

2014 and 2015 ACCREDITED JOURNALS

Faculty of Applied Science

Accredited Journal Articles 2014

Amosou, E.O., Siwela, M., & Dlamini, N. (2014). Chemical composition and microstructure of Bauhinia grains. *Journal Of Food Science And Technology*. 51(9), 2263-2269.

Anand, K., Gengan, R.M., Phulukdaree, A., & Chuturgoon, A. (2014). Agroforestry waste Moringa oleifera petals mediated green synthesis of gold nanoparticles and their anti-cancer and catalytic activity. *Journal of Industrial and Engineering Chemistry*. 21, 1105-1111.

Ayyappa, B., Kanchi, S., Singh, P., Sabela, M.I., Dovey, M., & Bisetty, K. (2014). Analytical evaluation of steviol glycosides by capillary electrophoresis supported with molecular docking studies. *Journal of the Iranian Chemical Society*. 12(1), 127-136.

Bahadur, I., Naidoo, P., Singh, S., Ramjugernath, D., & Deenadayalu, N. (2014). Effect of temperature on density, sound velocity, refractive index and their derived properties for the binary systems (heptanoic acid+ propanoic or butanoic acids). *The Journal of Chemical Thermodynamics*. 78, 7-15.

Bahadur, I., Singh, P., Kumar, S., Moodley, K., Mabaso, M., & Redhi, G. (2014). Separation of aromatic solvents from the reformate fraction of an oil refining process using extraction by a designed ionic liquid. *Separation Science and Technology*, 49(12), 1883-1888.

Bahadur, I., Deenadayalu, N., & Ramjugernath, D. (2014). Effects of temperature and concentration on interactions in methanol+ ethyl acetate and ethanol+ methyl acetate

or ethyl acetate systems: Insights from apparent molar volume and apparent molar isentropic compressibility study. *Thermochimica Acta*. 577, 87-94.

Bahadur, I., Singh, S., Deenadayalu, N., Naidoo, P., & Ramjugernath, D. (2014). Influence of alkyl group and temperature on thermophysical properties of carboxylic acid and their binary mixtures. *Thermochimica Acta*. 590, 151-159.

Bahadur, I., Deenadayalu, N., Naidoo, P., & Ramjugernath, D. (2014). Volumetric, acoustic and refractive index for the binary system (butyric acid+ hexanoic acid) at different temperatures. *Journal of Solution Chemistry*. 43(4), 787-803.

Bansilal, S., Brijlall, D., & Mkhwanazi, T. (2014). An exploration of the common content knowledge of high school mathematics teachers. *Perspectives in Education: Standards in education and training: the challenge*. 32(1), 34-50.

Bansilal, S., Brijlall, D., & Mkhwanazi, T. (2014). An exploration of the common content knowledge of high school mathematics teachers. *Perspectives in Education: Standards in education and training: the challenge*. 32(1), 34-50.

Bisetty, K., Sabela, M.I., Kanchi, S., Bathinapatla, A. (2014). The box-behnken design and response surface approach for the simultaneous determination of chromium (III) and (IV) using catalytic differential pulse polarography. *International Journal of Electrochemical Science*. 9, 6751-6754.

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- Brijlall, D. (2014). Exploring Practical Work as a Sustainable Strategy in Rural Mathematics Classrooms: A Case of Addition of Fractions. *International Journal of Educational Sciences.* 7(3), 481-490.
- Brijlall, D., & Maharaj, A. (2014). Exploring support strategies for high school mathematics teachers from underachieving schools. *International Journal of Educational Sciences.* 7(1), 99-107.
- Brijlall, D. (2014). Exploring the Pedagogical Content Knowledge for Teaching Probability in Middle School: A South African Case Study. *International Journal of Educational Sciences.* 7 (1), 719-726.
- Chalannavar, R. K., Venugopala, K. N., Baijnath, H., & Odhav, B. (2014). Chemical Composition of Essential Oil from the Seed Arils of Strelitzia nicolai Regel & Koern from South Africa. *Journal of Essential Oil Bearing Plants.* 17(6), 1373-1377.
- Charalambous, K., Sophocleous, C., O'Hara, J.G., & Leach, P.G.L. (2014). A deductive approach to the solution of the problem of optimal pairs trading from the viewpoint of stochastic control with time-dependent parameters. *Mathematical Methods in the Applied Sciences.* (wileyonlinelibrary.com) DOI:10.1002/mma.3383.
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INSTITUTIONAL RESEARCH ETHICS COMMITTEE

INSTITUTIONAL RESEARCH ETHICS COMMITTEE

The Institutional Research Ethics Committee (IREC) has the responsibility of evaluating, approving and monitoring research involving humans, animals and the environment. It does so by following accepted research ethical guidelines as laid out by the Department of Health of South Africa and the Declaration of Helsinki. It aims to protect the rights and welfare of research participants and subjects by adhering to the principles of beneficence, justice and respect for persons, especially vulnerable populations, animals and the environment. In so doing it must ensure that the research methodology and relevant literature is based on sound principles derived from appropriate scholarship with the aim to provide an answer to the research questions posed.

This year, ninety seven applications for ethics clearance were received and processed. These included applications for both degree and non-degree purposes. A detailed breakdown of the number of applications and approvals per Faculty is attached for perusal.

Two members resigned from the committee in 2014. Dr R A Smith (Faculty of Arts and Design) was replaced by Dr R Makombe. Prof S D E Obono (Faculty of Accounting and Informatics) was replaced by Prof R Millham.

Ethics Training Workshop

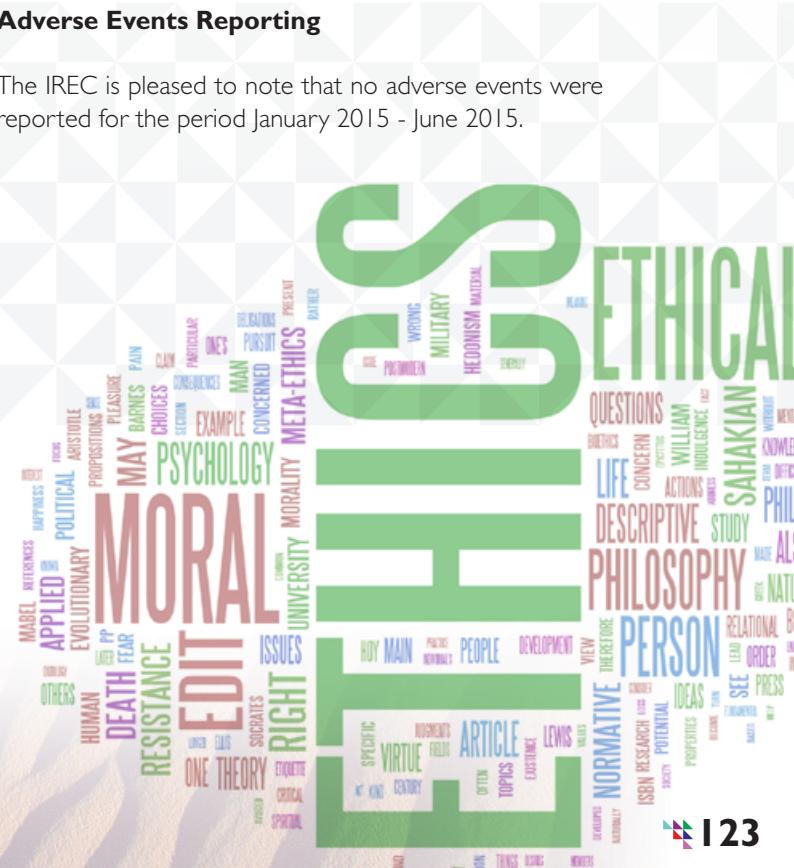
The IREC hosted an Ethics Training Workshop for the Humanities and Social Sciences on 20 March 2015. Dr Shenuka Singh, Chairperson of the Humanities and Social Sciences Research Ethics Committee at the University of Kwa-Zulu Natal facilitated the workshop. Thirty one staff attended the workshop. IREC plans to host further ethics training workshops in the second semester.

Adverse Events Reporting

The IREC is pleased to note that no adverse events were reported for the period January 2015 - June 2015. The IREC hosted an Ethics Training Workshop for the Humanities and Social Sciences on 20 March 2015. Dr Shenuka Singh, Chairperson of the Humanities and Social Sciences Research Ethics Committee at the University of Kwa-Zulu Natal facilitated the workshop. Thirty one staff attended the workshop. IREC plans to host further ethics training workshops in the second semester.

Adverse Events Reporting

The IREC is pleased to note that no adverse events were reported for the period January 2015 - June 2015.



APPLICATIONS FOR ETHICS CLEARANCE - 2014

APPLICATIONS FOR ETHICAL CLEARANCE - 2014				
FACULTY	Postgraduate Applications	Applications Approved	Independent Research	Applications Approved
Accounting and Informatics	12	9	5	1
Applied Sciences	12	11	2	2
Arts and Design	4	4	-	-
Engineering and the Built Environment	-	-	1	1
Health Sciences	48	43	7	7
Management Sciences	2	1	-	-
TOTAL	78	68	15	11

The Institutional Research Ethics Committee has the following to report for the period January 2015 - June 2015:
 Seventy eight applications for ethics clearance were received during this period:

Proposal	Applications Received	Applications Approved
PhD in Health Sciences	2	2
D Tech	9	5
M Tech	53	38
Independent Research	14	12
TOTAL	78	57

IREC Members

Professor J K Adam- Chairperson; Faculty of Health Sciences
 Professor M N Sibiya- Deputy Chairperson; Faculty of Health Sciences
 Advocate R Sewlal- Legal Representative
 Professor C Napier; Faculty of Applied Sciences
 Professor R M Gengan; Faculty of Applied Sciences
 Doctor C Smith; Faculty of Management Sciences
 Professor N Dorasamy; Faculty of Management Sciences
 Professor P D F Z Siyakwazi; Faculty of Arts and Design

Doctor R Makombe; Faculty of Arts and Design
 Doctor D Heukelman; Faculty of Accounting and Informatics
 Professor R Millham; Faculty of Accounting and Informatics
 Professor P Musonge; Faculty of Engineering and the Built Environment
 Doctor D Whelan; Faculty of Engineering and the Built Environment
 Mr C M C Hemson: Community Representative
 Mr W Benjamin Community Representative
 Ms L Deonarian: Administrator



RESEARCH GRANT ACQUISITIONS

RESEARCH FUNDING

Scholarship Allocations 2014

NRF B-Tech Block Grant for 2014

Innovation 2014 @ R40 000/student										
Department	Students	Amount	Female	Male	African	Indian	White	Coloured	Foreign National	
Faculty of Art and Design										
Fashion and Design	1	R 40,000	1	0	0	1	0	0	0	0
Journalism	1	R 40,000	1	0	1	0	0	0	0	0
Fine Art	1	R 40,000	0	1	1	0	0	0	0	0
Video Technology	3	R 120,000	0	3	2	1	0	0	0	0
TOTAL	6	R 240000	2	4	4	2	0	0	0	0
Faculty of Accounting and Informatics										
Information Technology	6	R 240,000	1	5	5	1	0	0	1	
TOTAL	6	R 240000	1	5	5	1	0	0	1	
Faculty of Applied Sciences										
Biotechnology and Food Technology	7	R 280,000	6	1	5	2	0	0	4	
Chemistry	6	R 240,000	4	2	5	1	0	0	0	
Consumer Science: Food and Nutrition	1	R 40,000	0	1	1	0	0	0	0	
TOTAL	14	R 560,000	10	4	11	3	0	0	4	
Faculty of Engineering and Built Environment										
Architectural Technology	4	R 160,000	2	2	1	3	0	0	0	
Industrial Engineering	5	R 200,000	2	3	4	1	0	0	0	
Chemical Engineering	2	R 80,000	1	1	2	0	0	0	0	
Mechanical Engineering	2	R 80,000	0	2	2	0	0	0	0	
TOTAL	13	R 520,000	5	8	9	4	0	0	0	
Faculty of Health Science										
Child and Youth Care	5	R 200,000	4	1	4	1	0	0	0	
Dental Sciences	1	R 40,000	1	0	1	0	0	0	0	
TOTAL	6	R 240,000	5	1	5	1	0	0	0	

Innovation 2014 @ R40 000/student									
Department	Students	Amount	Female	Male	African	Indian	White	Coloured	Foreign National
Faculty of Management Sciences									
Retail Business Management	1	R 40,000	1	0	1	0	0	0	0
Public Relations Management	1	R 40,000	1	0	1	0	0	0	0
Public Management	2	R 80,000	2	0	2	0	0	0	0
TOTAL	4	R 160,000	4	0	4	0	0	0	0
Grand total		R 1,960,000							
SCARCE SKILLS 2014 @R40 000/student									
Faculty of Accounting and Informatics									
Library and Information Studies	2	R 80,000	2	0	2	0	0	0	0
Auditing and Taxation	8	R 320,000	6	2	8	0	0	0	0
TOTAL	10	R 400,000	8	2	10	0	0	0	0
Faculty of Applied Sciences									
Chemistry	3	R 120,000	3	0	1	2	0	0	0
Biotechnology and Food Technology	5	R 200,000	5	0	3	2	0	0	0
TOTAL	8	R 320,000	8	0	4	4	0	0	0
Faculty of Engineering and Built Environment									
Chemical Engineering	2	R 80,000	1	1	2	0	0	0	0
Mechanical Engineering	1	R 40,000	0	1	1	0	0	0	0
TOTAL	3	R 120,000	1	2	3	0	0	0	0
Faculty of Management Sciences									
Cost and Management Accounting	19	R 760,000	9	10	18	0	0	1	0
TOTAL	19	R 760,000	9	10	18	0	0	1	0
Grand total		R 1,600,000							
2014 FREE STANDING @R20 000/student									
Faculty of Art and Design									
Fashion and Textile	1	R 20,000	0	1	0	0	1	0	0
Translation and Interpreting Practice	1	R 20,000	0	1	1	0	0	0	0
Interior Design	1	R 20,000	0	1	1	0	0	0	0
TOTAL	3	R 60,000	0	3	2	0	1	0	0

Department	Students	Amount	Female	Male	African	Indian	White	Coloured	Foreign National
Faculty of Accounting and Informatics									
Office Management Technology	1	R 20,000	1	0	1	0	0	0	0
Management Accounting	1	R 20,000	1	0	1	0	0	0	0
Auditing and Taxation	1	R 20,000	0	1	1	0	0	0	0
TOTAL	3	R 60,000	2	1	3	0	0	0	0

Faculty of Management Sciences

Public Relations Management	2	R 40,000	1	1	2	0	0	0	0
Human Resource Management	3	R 60,000	2	1	2	1	0	0	0
Hospitality and Tourism	1	R 20,000	1	0	0	1	0	0	0
Public Management	3	R 60,000	1	2	3	0	0	0	0
TOTAL	9	R 180,000	5	4	7	2	0	0	0
Grand Total		R 300,000							

NRF Funding allocation for projects that started in 2014

Awarded to Durban University of Technology	Released to-date (19 June 2014)
R17,338,240	R13,181,140
India/Brazil/South Africa Research Cooperation Programme (IBSA)	
Principal Investigator	Award
Professor Faizal Bux	R500,000
Professor Nirmala Deenadayalu	R299,500
GRAND TOTAL	R799,500

Innovation 2014 @ R40 000/student

Surname Name	Name	Gender	Race	Nationality	Faculty	Department	Award
Govender	Karina	Female	Indian	South Africa	Applied Sciences	Consumer Science: Food and Nutrition	R 40,000
Khubisa	Freedom M	Male	African	South Africa	Accounting and Informatics	Information Technology	R 40,000
Watson	Roxanne L	Female	White	South Africa	Applied Sciences	Consumer Science: Food and Nutrition	R 40,000
Grand TOTAL							R 120,000

LIST OF INTERNAL GRANTS AWARDED IN 2014

Name	Department	Amount
COMPLETION GRANT		
Mr M Tenza	Department of Regional Governance & Development (Midlands)	R 10 560.00
Mr J B Foley	Department of Horticulture	R 15 000.00
Mr R M Miya	Department of Nursing (Indumiso Campus)	R 6 000.00

SEED FUNDING

Ms W Rawlinson	Department of Media, Language and Communication	R 3 850.00
Ms C Ngwane	Department of Media, Language and Communication	R 37 000.00
Ms CT Duba	Department of Mathematics	R 40 000.00

ACADEMIC EXCHANGE PROGRAMME

Mr N Gqweta	Department of Radiography	R 29 250.00
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RESEARCH FUNDING

SCHOLARSHIP ALLOCATIONS 2015

(i) Levenstein Scholarships 2015 Allocations

For the academic year 2015, 25 Levenstein scholarships were allocated (see Appendix I for the full list of names) with a total value of R 1 026 667. The following table provides details:

Race	Masters	Doctorate	Total Number
African	16	1	17
Male	8	1	9
Female	8	0	8
Indian	2	2	4
Male	0	0	0
Female	2	2	4
White	4	0	4
Male	3	0	3
Female	1	0	1
Total Number	22	3	25

*This bursary is allocated to full-time students and generally there are fewer full-time South African doctoral candidates qualifying. There is a high demand for scholarships at masters level.

NRF BTech Block Grant Scholarships 2015

The university was awarded an NRF block grant to the value of R 4 350 000 which was allocated to a total of 104 students across the six faculties according to NRF criteria. The categories consisted of the following:

BTech Block Grant Category	Amount	Total number of awards
Innovation(R)	2450000	49
Free Standing (R)	300000	15
Scarce Skills (R)	1600000	40
Total Award (R)	4350000	104

BTECH NRF BLOCK GRANTS 2015

The National Research Foundation (NRF) BTech Block grant for 2015 was allocated as indicated in Table 1. The three awards – Innovation, Free Standing and Scarce Skills – had preset but varying guidelines and criteria for allocations, sorted according to the % aggregate from highest to lowest. NRF guidelines and criteria for selection included aggregate, % females, % males, South Africa's list of scarce skills fields of study, discipline [Science, Engineering and Technology (SET) or Social Sciences and Humanities (SSH)], geographic spread and demographics, with a cut-off at 60% aggregate.

Table 1 NRF BTech Block grant allocations for 2015 (first round)

Faculty	Total Number of awards	Innovation (R50000)	Free Standing (R20000)	Scarce Skills (R40000)
Accounting and Informatics	34	4	2	28
Applied Sciences	16	11	0	5
Arts and Design	6	1	5	0
Engineering and the Built Environment	23	21		2
Management Sciences	20	8	8	4
TOTAL	104	49	15	40

Of the 104 awards available in the first round of allocations, 59 went to females (51% SET and 49% SSH) while the remaining 45 for males were distributed as 42% SET and 58% SSH.

Overall, 47% of the 104 awards went to SET (Table 2).

Gender	SET	SSH	Total
Male	19	26	45
%	42.22	57.78	100.00
Female	30	29	59
%	50.85	49.15	100.00
Total	49	55	104
%	47.12	52.88	100.00

% Aggregate showed a skewness for both SET and SSH disciplines. Students in SSH tended to score higher than those from SET. NRF BTech Bloch grants are awarded using the National Diploma results (Figure 1).

Figure 1 Distribution of % aggregates across SET and SSH BTech students using National Diploma data



RESEARCH CAPACITY BUILDING PROGRAMME

THE RESEARCH CAPACITY BUILDING (RCB) PROGRAMME



Message from the Coordinator
Ms Vaneshree Govender

The Research Directorate focuses on managing the university's research activities. This is achieved by supporting academic and research staff through organizing research capacity building (RCB) initiatives. These initiatives have sought to build research capacity through enhancing the professional development of academic and research staff at the University. Scholarly in the field of RCB indicate that the following are six principles of capacity building:

1. Building skills and confidence of staff members
2. Developing linkage's and partnerships
3. Ensuring the research is 'close to practice'
4. Developing appropriate dissemination
5. Investments in infrastructure, and
6. Building elements of sustainability and continuity

The RCB programme has provided support to University staff through the following initiatives:

- Research Methodology Course
- Finding and Managing Information for your Research.
- SPSS Workshop
- Preparing and Writing up your Research Proposal
- Research reading skills Part 1: Finding and organising sources – Research Reading Skills
- Part 2: Understanding scholarly texts
- Writing and submitting conference papers
- Oral and virtual presentation of papers at conferences
- Writing a thesis Part 1: Creative strategies for idea generation
- Paradigms: An overview will be given of different research paradigms, and the different demands/criteria for various orientations.
- Institutional Research Day

Additional capacity building workshops were run by specialists in their field to share their expertise. Strengthening Doctoral Supervision A three phase workshop facilitated by Professor Jenny Clarence-Fincham from the University of Johannesburg and Professor Elda Lyster. The aim of this workshop was to help new supervisors engage with the practice and process of doctoral supervision. This innovative workshop provided the structured support needed by academics as they take on the complex and demanding role of postgraduate supervision. The workshop combined discussions, case studies, research literature, video clips, and activities and information, both online and face-to-face, to help the new supervisor engage with the practice and process of postgraduate supervision in a reflective and informed way.

Research Article-writing for Publication workshop facilitated by Dr Graham Baker and Dr Elisabeth Lickindorf. The workshop targeted researchers at entry level who were ready and motivated to prepare and submit a completed set of research results for publication in a peer-reviewed journal of their choice. Researchers who are committed to attending the article writing programme (part 1 and part 2). The components of the activities in this article-writing programme were:

Structured preparatory activities by individuals and attendance at Workshop Part 1 (a prerequisite for researchers with no experience or limited experience of publishing research articles) before attending the three-day Workshop 2 where each participant (with support via individual consultations and optional group discussions) works on his or her draft research paper to the point of readiness to submit for publication;

A follow-up consultative and revision process

Workshop Part 2, during which each participating researcher revised the research paper for publication (first, with the assistance of co-author(s) if any; and second, with editorial assistance from a workshop facilitator; as advice that may come from a mentor [e.g. an appropriate peer or colleague or the researcher's academic supervisor] or from a 'second opinion' experienced peer in the field willing to act as a preliminary reviewer; the submission and, if accepted, publication of the paper via the editor of the selected journal (to which the participant submits the paper and, on its acceptance, liaises with the editor about final revisions).

DUT SANTRUST PRE-DOCTORAL PROGRAMME 2014/2015

The DUT/SANTRUST Pre-Doctoral Programme was an initiative through the Vice Chancellor, Professor Ahmed Bawa's office. The Programme assists staff members to upgrade their qualifications to a Doctorate/PhD.

It consisted of approximately seven weeks of contact learning, covered by five (5) modules, over an annualized period. It was aimed at doctoral candidates and their supervisors. The programme facilitated research proposal knowledge at a doctoral level. Leading research methodologists led modules designed to complement the discipline-specific preparation for thesis undertakings by candidates.

It was coordinated by Professor CC Jinabhai, who served for both the overall academic coordination of the Programme, as well as a facilitator during the module offerings. Each of the research modules was developed in consultations with respective subject experts and then revised to meet the DUT doctoral studies requirements.

The selection committee chose thirty (30) candidates to participate in the programme. The following were the criteria for selection; viz: Candidates must have completed a Master's Degree, must be in early registration for a PhD/Doctorate; must have had a Supervisor and/or was

confident of having a Supervisor while on the programme; must be an academic staff member of the University; must show evidence of commitment to a career in academia and had a publishing record/attended conferences. Most importantly, candidates needed to commit to attending all days of all Modules during the scheduled times and prepared to undertake to complete the Doctoral degree within the minimum time of 3 years of the Degree. The candidates selected for the programme were staff from across the six faculties as well as from the International Office and the Library Directorate. The Programme assisted candidates to develop a proposal within the 6 months and it also develop supervision skills as well as knowledge of statistics. At the end of the programme all thirty (30) participants graduated by fulfilling the requirements of the programme. The first phase of the Programme was completed in March 2015.

Candidates who participated in the programme were:

Cabangile Ncengeni Ngwane (Media, Lang & Communication)

Cephas Makwara (School of Education)

Daryl David De Kock (Civil Engineering, Civil Engineering -Midlands)

Gill Lincoln (Town & Regional Planning)

Gillian Cruickshank (Celt)

Indrani Govender (Horticulture)

Itumeleng Judith Maome (Entrepreneurial Studies & Management)

Jaya Naidoo (Hospitality & Tourism, Hospitality & Tourism)

John Mangundu (School of Education)

Karen Margaret Corbishley (Marketing and Retail Management)

Lavern Samuels (International Education & Partnership)

Lewis Victor Kaplan (Entrepreneurial Studies & Management)

Lloyd Christopher (Emergency Medical Care & Rescue)

Lucille Elizabeth Webster (Library)

Matthys Michielse Walters (Basic Medical Sciences)

Mary Mutanda (Auditing)

Nirvana Naidoo (Chemical Engineering)

Pauline Busisiwe Nomnga (Radiography)

Prinavin Govender (Information Technology)
Raveen Naidoo (Emergency Medical Care & Rescue)
Robynne Jean Hansmann (Town & Regional Planning)
Santhya Pillay (Entrepreneurial Studies & Management)
Subhadranalene Naidoo (Radiography)
Tasneem Seedat (Media Lang & Communication)
Ntokozo Ndlela (Applied Management)
Misheck Phiri (Civil Engineering & Surveying)
Caroline Nessa Adams (Nursing)
Malesela Kenneth Moutlana (Mechanical Engineering)
Pradeep Sukhdeo Ojageer (Entrepreneurial Studies & Management)
Pradeep Ashocoomar (Emergency Medical Care & Rescue)



RESEARCH CAPACITY BUILDING – MIDLANDS CAMPUS

Academic publishing and productivity unit measurement – The South African Context was presented by Dr Thembisa Waetjen. The workshop was well attended by members of staff from both the Indumiso and Riverside Campus who engaged in discussion in the area of publishing. The outcome of workshop indicated a positive trajectory in the development of researchers and engendering a research culture in the Midlands is on the increase. Feedback obtained from some staff who had received negative reviews from earlier journal article submissions was

positive as they felt motivated to resume the process. The next phase is to begin with journal writing workshops with smaller groups of people and plans are already in place to implement these workshops in the next term.

Guest Lecture on Demystifying Research: Scholarship of Teaching and Learning was presented by Professor Livingstone Makondo. The feedback received from the workshop evaluation questionnaires was extremely positive.

Article Writing Workshop facilitated by Dr Graham Baker and Dr Elisabeth Lickendorf was held in the midlands campus. There were fifteen (15) members of staff from both the Indumiso and Riverside Campuses who attended day one. Day two consisted of individual consultations with the facilitators and staff received personal attention on how to structure their article as well as critical analysis of their concept outlines. Drs Baker & Lickendorf were exceptionally thorough, supportive and provided an excellent platform for academic engagement.



DURBAN UNIVERSITY OF TECHNOLOGY'S GREEN ECONOMY AGENDA

The Green Economy, Sustainability and Governance theme has been identified as a path for growing applicable and scientific knowledge through interdisciplinary collaborations, and increasing university publication outputs. Realities of climate change, which is affecting the demise of thousands of species and threatening our ecosystem, have added to human vulnerability and social inequality.

Vice-Chancellor, Professor Ahmed Bawa, speaking at the Green Economy conference confirmed that "one of the most significant challenges facing humanity in the 21st century is the impact that it has had on the state of the Earth. This has resulted primarily from the modes of development that we have chosen, such as rapid industrialisation, unsustainable consumption, humongous levels of wastage, unprecedented levels of pollution of all three biospheres of the Earth, and so on. What this tells us is that there is a direct link between the nature of the economy and the long term quality of life of all forms".

The Green Economy research area is envisaged as an enterprise that will address issues of solid waste management, social responses to climate change, and governmental policies towards sustainable development. It is directed towards facilitating inclusive growth and poverty eradication in ecologically viable terms.

In accordance with its green campus and sustainability agenda, the online Journal of Green Economy and Development is hosted by the Research and Postgraduate Support Unit. The launch of the journal in 2014 signaled the widening of local debates to encompass concerns about environmental degradation, and issues around power relations and widening social inequality. The journal provides a platform for disseminating original research that advances the problem-solving capacity of policy makers and the private sector in matters of green economy.

On 8 - 13 July 2015, the university in partnership with the South African IQRAA Trust and Eskom, along with the Manchester Metropolitan University Business School (UK), Erlangen University (Germany) and Green Publications came together in a joint effort to co-host the Journal of Green Economy and Development conference with the theme: Greening Developing Economies in the Wake of Falling Oil Prices. Dr Baker, IQRAA Trust Chairman, stressed the importance of making the conference "more than a talk show" and expects the Green Economy Research theme to have an impact on the socio-economic landscape of our region.

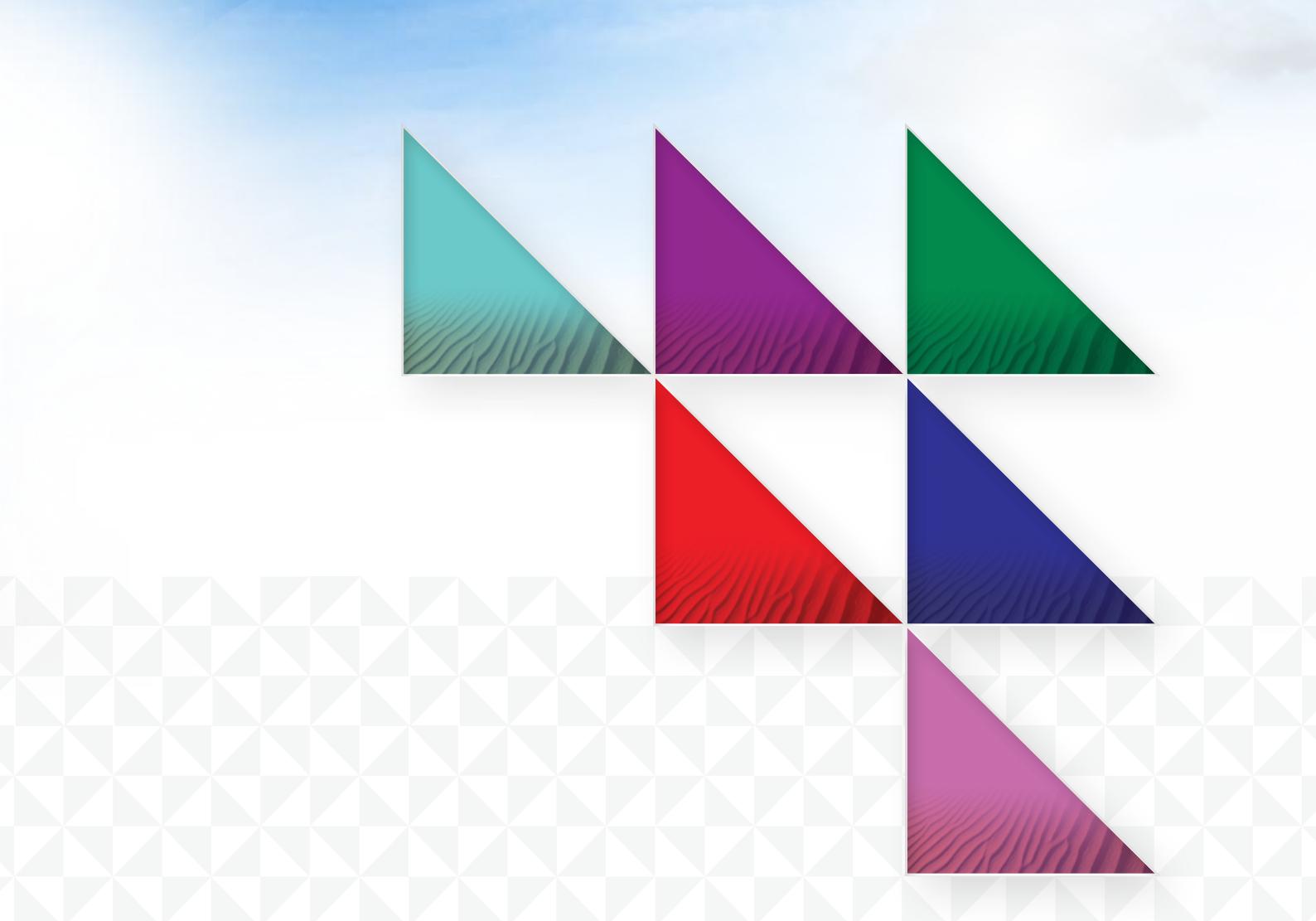
The conference had four keynote speakers: Vice-Chancellor Prof Ahmed Bawa, Prof Kaehler from the Institut für Wirtschaftswissenschaft, Erlangen, Germany, Dr Tidings Ndhlovu, from MMU Business School, UK and Prof Nceba Gqaleni, DUT. At the gala dinner that took place on 18 December 2014.

Dr Tidings Ndhlovu, who oversees the new Journal's editorial review board, observed that "Durban is the seed-bed (isihlumisela sembewu) for growing and extending this exciting initiative. The choice of Durban as the venue for the first conference was poignant in that it boasts of an excellent natural environment that is, however, accompanied by the pressures for energy inputs that will become even more challenging with the potential oil/gas reserves off the coast of Durban." Ndhlovu's full address, which discusses economist Piketty's work, Capital in the Twenty-First Century, appears in the first journal issue available at <https://journalofgreenconomy.wordpress.com/>

JGED
journal of green economy & development

INSTITUTIONAL RESEARCH DAY 2014





TECHNOLOGY TRANSFER AND INNOVATION



MESSAGE FROM DIRECTOR: TECHNOLOGY TRANSFER AND INNOVATION

The DUT Technology Transfer and Innovation (TTI) office was formed in terms of prescriptions for the South African Act on Intellectual Property from Publicly Financed Research and Development (IP Act). The aim of the Technology Transfer unit is to promote innovation, technology transfer and entrepreneurship to position DUT as a Centre of Excellence in Technology. The TTI Office acts directly in line with the strategic goals of the university, and the general mandate spreads broader than the operations of a traditional TTO. TTI further assists research units with the submission government tenders, funding applications for the commercialisation of research and securing funds for commercialisation of technology or knowledge centres.

In the 2015/2016 financial year the Directorate and the Faculty of Applied Sciences (Department of Food Technology) was allocated an amount of R820 000 from the KZN Department of Economic Development Tourism and Environmental Affairs (EDTEA) in support of a technology development project. The Directorate was also playing an instrumental role in securing an amount of R980 000 from the National Lotto Fund.

The Technology Innovation Agency (TIA) further allocated a total of R3.7 million towards the commercialisation of a number of technology development projects at DUT. The DUT Seed Fund Committee awarded these funds to innovation-oriented research projects conducted at DUT. The intention of the Seed Fund is develop preliminary research outputs where initial proof of concept has been demonstrated, in order that they may be commercialized or better positioned to receive next-round innovation funding. Nine (9) applications were granted approval, namely:

- Evaluation of Micro-algal Biomass & Lipid production at Demonstration Stage
- Assessment of Harvesting & Drying Technology for Micro-algal Biomass
- Biofilms Packaging Industry
- Industrial Biotechnology
- Subscription based Wastewater knowledge and troubleshooting web interface
- Purification of Algal Phycocyanin for Pharmaceutical Application
- Telecentre Monitoring System
- Activities for Ventilator System
- Activities for Cervical Spine Immobilisation Device
- Improvement & Commercialisation of 3 Food products

In the present cycle of the strategic plan, the TTI Office will continue an important role in the university focus towards the commercialisation of technology related intellectual property. This means that in the present cycle, the DUT TTI Office is actively engaged activities that can help secure industry and government funding of projects aimed at technology development and social upliftment through applied research.



DUT/SANTRUST PRE-DOCTORAL PROPOSAL DEVELOPMENT PROGRAMME





ANNUAL RESEARCH AWARDS 2014



ACKNOWLEDGEMENTS

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Dr Paul Green

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PLANT A NOTION

"Going green" doesn't have to be a daunting task that means sweeping life changes. Simple things can make a difference.

The contents of this list might not be new, but they bear repeating. Sometimes it takes a few reminders for things to take root.

1. CHANGE YOUR LIGHT

If every household in the United States replaced one regular lightbulb with one of these new compact fluorescent bulbs, the pollution reduction would be equivalent to removing one million cars from the road.

Don't like the color of light? Use these bulbs for closets, laundry rooms and other places where it won't look you in the eye.

2. TURN OFF COMPUTERS AT NIGHT

By turning off your computer instead of leaving it to sleep mode, you can save 40 watts per day. That adds up to 4 cents a day (\$14 per year). If you don't want to wait for your computer to start up, set it to turn on automatically a few minutes before you get to work, or boot up while you're pouring your morning cup of joe.

3. DON'T RINSE

Stop rinsing dishes before using your dishwasher and save up to 20 gallons of water each load. Plus, you're saving time and the energy used for the additional water.

4. DO NOT HEAT THE OVEN

Unless you are making bread or pastries of some sort, don't pre-heat the oven. Just turn it on when you put the dish in. Also, when checking on your food, look through the oven window instead of opening the door.

5. RECYCLE GLASS

Recycled glass reduces related air pollution by 20 percent and related water pollution by 50 percent. If it can't be recycled, it can take a million years to decompose.

6. DIPPER WITH A CONSCIENCE

By the time a child's toilet training, a parent will change between 5,000 and 8,000 diapers, adding up to approximately 3.5 million tons of waste in U.S. landfills each year. Whether you choose cloth or a more environmentally-friendly disposable, you're making a choice that has a much gentler impact on our planet.

7. HANG DRY

Get a clothesline or rack to dry your clothing by the air. You'll save time, will maintain color and, if you do it, you'll save money.

8. GO VEGETARIAN ONCE A WEEK

One less meat-based meal a week helps the planet and your diet. For example: It requires 2,500 gallons of water to produce one pound of beef. You'll also save some trees. For each hamburger that originated from animals raised on rainforest land, approximately 55 square feet of forest have been destroyed.

9. WASH IN COLD OR WARM

If all the households in the U.S. switched from hot-hot cycle to warm-cold, we could save the energy comparable to 100,000 barrels of oil a day.

10. USE ONE LESS PAPER NAPKIN

Using an average year, Americans use approximately 2,200 napkins around the country each day. If everyone in the U.S. used one less napkin a day, more than a million pounds of napkins could be saved from landfills each year.

11. USE BOTH SIDES OF PAPER

American businesses throw away 21 million tons of paper every year, equal to 175 pounds per office worker. For a quick and easy way to halve this, set your printer's default option to print double-sided (duplex printing). And when you're finished with your documents, don't forget to take them to the recycling bin.

12. RECYCLE NEWSPAPER

There are 65 million newspapers printed each day in the U.S. Of those, 44 million, or about 69%, of them will be thrown away. Recycling just the Sunday papers would save more than a million trees every week.

13. WRAP CREATIVELY

You can reuse gift bags, bows and paper, but you can also make something unique by using old maps, cloth or even newspaper. Flip a paper grocery bag inside out and give your child stamps or markers to create their own wrapping paper that's environmentally friendly and extra special for the recipient.

14. RETHINK BOTTLED WATER

Nearly 90% of plastic water bottles are not recycled. Instead, take thousands of years to decompose. Buy a reusable container and fill it with tap water, a great choice for the environment, your wallet and possibly your health. The EPA's standards for tap water are more stringent than the FDA's standards for bottled water.

15. BURN BATH TIME

Have a no-dash week, and take showers instead. Baths require almost twice as much water. Not only will you reduce water consumption, but the energy costs associated with heating the water.

16. BRUSH WITHOUT RUNNING

You've heard this one before, but maybe you still do it. You'll conserve up to five gallons per day if you stop. Daily savings in the U.S. alone could add up to 1.5 million gallons—more than what's used in the Big Apple.

17. SHOWER WITH YOUR PARTNER

Splash in a shower with your loved one to start the day with some zest that doesn't come in a bar. Not only have you made a wise choice for the environment, but you may notice some other added...um...benefits.

18. TAKE A SHORTER SHOWER

Every two minutes you spend on your shower can conserve more than ten gallons of water. If everyone in the country saved just one gallon from their daily shower, over the course of a year, it would equal twice the amount of freshwater withdrawn from the Great Lakes every day.

19. PLANT A TREE

It's good for the air, the land, can shade your house and save on cooling (plant in the west side of your home), and they can improve the value of your property.

Make it meaningful for the whole family and plant a tree every year for each member.

20. USE YOUR CRUISE CONTROL

You pay for these extra buttons in your car, so put them to work. When using cruise control, your vehicle could get up to 15% better mileage. Considering today's gasoline prices, this is a boon not only for the environment but your budget as well.

21. SECOND-HAND DOESN'T MEAN SECOND-BEST

Consider buying items from a second-hand store, toys, books, roller blades and other age and size-specific items are quickly outgrown. Second hand stores often sell these items in excellent condition since they are used for such a short period of time, and will generally buy them back when you no longer need them.

22. BUY LOCAL

Consider the amount of pollution created to get your food from the farm to your table. Whenever possible, buy from local farmers or farmers' markets, supporting your local economy and reducing the amount of greenhouse gas created when products are flown or trucked in.

23. ADJUST YOUR THERMOSTAT

Adjust your thermostat one degree higher in the summer and one degree cooler in the winter. Each degree saves less

than about 10% on your energy use! In addition, invest in a programmable thermostat which allows you to regulate temperature based on the times you are home or away.

24. INVEST IN YOUR OWN COFFEE CUP

If you start every morning with a styrofoam cup, a quick tabulation can show you that the waste is rising. Invest in a reusable cup, which not only cuts down on waste, but keeps your beverage hot for a much longer time. Most coffee shops will happily fill your own cup, and many even offer you a discount in exchange!

25. BATCH ERINARDS

Fed like you spend your whole week trying to catch up with the errands? Take a few moments once a week to make a list of all the brands that need to get done, and see if you can batch them into one trip. Not only will you be saving gasoline, but you might find yourself with much better time management skills.

26. TURN OFF LIGHTS

Away turn off fluorescent bulbs when you leave a room. Fluorescent bulbs are more affected by the number of times it's switched on and off, so turn them off when you leave a room for 15 minutes or more. You'll save energy on the bulb itself, but also on cooling costs, as lights contribute heat to a room.

27. GREEN LAWN CARE

If you must water your lawn, do it early in the morning before any moisture is lost to evaporation. Have a few weeds? Spot treat them with vinegar. Not sure if you should? Normal clippings act as a natural fertilizer, let them be. If you've watered too long, take a walk - it's excellent exercise.

28. PRIME WITH A HORN

Some drivers in between their artichoke dip and the cobblestone, you fast track of your car, and now there are a sea of matching cups on the table, one of which might be yours. The next time you park, set out permanent marker next to dispensableware so guests can mark their cup and everyone will use one.

29. RECYCLE OLD CELL PHONES

The average cell phone lasts around 18 months, which means 130 million phones will be replaced each year. If they go into landfills, the phones and their batteries introduce toxins into our environment. There are plenty of reputable programs where you can recycle your phone, many of which benefit noble causes.

30. MOUNTAIN YOUR VEHICLE

Not only does this reduce the life of your vehicle, but you are increasing fuel pollution and gas use. A properly maintained vehicle drives 10% better, and inflated tires greatly improve your vehicle's performance. And it might not hurt to clean out the trunk—all that extra weight could be costing you at the pump.

31. RECYCLE UNWANTED WIRE HANGERS

Wire hangers are generally made of steel, which is often not accepted by some recycling programs. So what do you do with them? Most dry cleaners will accept them back to reuse or recycle, (cue Joan Crawford.)

32. RECYCLE ALUMINUM AND GLASS

Twenty recycled aluminum cans can be made with the energy it takes to manufacture one brand new one.

Every ton of glass recycled saves the equivalent of nine gallons of fuel oil needed to make glass from scratch.

33. TELECOMMUTE

See if you can work out an arrangement with your employer that you work from home for some portion of the week. Not only will you save money and gasoline, and you get to sleep in your pajamas.

34. KEEP YOUR FIREPLACE DAMPER CLOSED

Keeping the damper open (when you're not using your fireplace) is like keeping a 40-inch window wide open during

the winter; it allows warm air to go right up the chimney. This can add up to hundreds of dollars each winter in energy loss.

35. CUT DOWN ON JUNK MAIL

Feel like you need to lose a few pounds? It might be your junk mail that's weighing you down. The average American receives 40 pounds of junk mail each year, destroying 100 million trees. There are many safeties that can help reduce the clutter in your mailbox, saving trees and the precious space on your countertops.

36. CHOOSE MATCHES OVER LIGHTERS

Most lighters are made out of plastic and filled with butane, both petroleum products. Since most lighters are considered "disposable," over 1.5 billion end up in landfills each year. When choosing matches, pick cardboard over wood. Wood matches come from trees, whereas most cardboard matches are made from recycled paper.

37. LET YOUR FINGERS DO THE WORKING—ONLINE

Consider if you really need a paper phone book. It's not all to stop phone book delivery and use an online directory instead. Some estimate that telephone books make up almost ten percent of waste at dump sites. And if you still receive the book, don't forget to recycle your old volumes.

38. GIVE IT AWAY

Before you throw something away, think about if someone else might need it. Either donate to a charitable organization or post it on a web site designed to connect people and things, such as Freecycle.org.

39. GO TO A CAR WASH

Professional car washes are often more efficient with water consumption. If everyone in the U.S. who washes their car themselves took just one visit to the car wash we could save nearly 0.7 billion gallons of water,

40. PLASTIC BAGS SUCK

Each year the U.S. uses 84 billion plastic bags, a significant portion of which ends up worldwide. They are not biodegradable, and are making their way into our oceans, and subsequently, the food chain. Stronger, reusable bags are an inexpensive and readily available option.

41. FLY WITH AN E-TICKET

The cost of processing a paper ticket is approximately \$10. While processing an e-ticket costs only \$1. In the near future, e-tickets will be the only option, saving the airline industry \$3 billion a year. In addition to financial savings, the sheer amount of paper eliminated by this process is commendable.

42. DOWNLOAD YOUR SOFTWARE

Most software comes on a compact disc, and more than forty billion compact discs of all types are sold annually. That's a huge amount of waste, not to mention the associated packaging. Another bonus to downloading your software is that it's often available for download at a later date when you upgrade to a new computer or are attempting to recover from a crash.

43. WHO USES ANSWERING MACHINES?

Answering machines use energy 24 hours a day, seven days a week. And when they break, they're just one more thing that goes into the landfill. If all answering machines in the U.S. homes were eventually replaced by voice mail service, the annual energy savings would total nearly 100 million hours.

I like my sugar with coffee and cream.

44. SKIP THE COFFEE STRIDER

Each year, Americans throw away 138 billion straws and stirrers. But skipping the stirrer doesn't mean drinking your coffee black. Simply put your sugar and cream in first, and then pour in the coffee, and it should be well mixed.

Determined to skip? Break off a piece of pasta from the cupboard. You can nibble after using it, compost, or throw away with less guilt.

45. FIND A BETTER WAY TO BREAK THE ICE

When a big winter storm heads our way, most of us use some sort of ice melt to treat steps and sidewalks. While the chemicals in ice melt for driveways may pose a hazard for pets who might ingest the product, rock salt and salt-based de-icing products can cause health problems as well as contaminate wells and drinking water. Look for a pet-safe deicer, readily available in many stores.

46. USE COTTON SWABS WITH A PAPERBOARD SPINDLE

Some brands of cotton swabs have a paperboard spindle while others are made of plastic. If 10% of U.S. households switched to a paperboard spindle, the petroleum energy saved per year would be equivalent to over 150,000 gallons of gasoline.

47. PAY BILLS ONLINE

By some estimates, if all households in the U.S. paid their bills online and received electronic statements instead of paper, we'd save 16.5 million trees every year, 2.2 billion tons of carbon dioxide and other greenhouse gases, and 1.7 billion pounds of solid waste.

48. STOP PAPER BANK STATEMENTS

Some banks will pay you a dollar or donate money on your behalf when you cancel the monthly paper statements you get in the mail. If every household took advantage of online bank statements, the money saved could send more than seventeen thousand recent high school graduates to a public university for a year.

49. USE RECHARGEABLE BATTERIES

Each year 15 billion batteries produced and sold and most of them are disposable alkaline batteries. Only a fraction of those are recyclable. Buy a charger and a few sets of rechargeable batteries. Although it requires an upfront investment, it's one that should pay off in no time. And on Christmas morning when all the stores are closed? You'll be fully stocked.

50. SHARE

Take what you've learned, and pass the knowledge on to others. If every person you know could take one small step toward being greener, the collective effort could be phenomenal.

