

RESEARCH FOCUS AREAS

SUMMARY

The Research and Postgraduate Support Directorate focuses on managing the university's research activities and supporting the academic and research staff through research management and development systems, organizing research capacity building initiatives, and providing research support. The division enhances the universities profile by facilitating the development and implementation of strategic research and postgraduate support policies that stimulate sustainable growth and increase the research base. Importantly, among the strongholds of the division are the established and emerging Research Focus Areas.

ESTABLISHED RESEARCH FOCUS AREAS

<p>AFRICAN INDIGENOUS KNOWLEDGE SYSTEMS RESEARCH</p> <p>The focus of the research is on Indigenous Knowledge Systems particularly African Traditional Medicine. The research is largely based on the following aspects:</p> <ul style="list-style-type: none"> • Theory and philosophy of African Traditional Medicine • Science and other ways of knowing • Traditional medicine in the context of HIV and AIDS, STIs and TB • Commercialisation of traditional medicine 	<p>TEAM LEADER Professor Nceba Gqaleni</p> <p>HOST Faculty of Health Sciences</p> <p>CONTACTS nceba5850@gmail.com +27 31 373 2453</p>
<p>COMPOSITE RESEARCH GROUP (CRG)</p> <p>The Composite Research Group has three focuses:</p> <ul style="list-style-type: none"> • Composites, • Bio-Composites and • Nano-Composites. <p>Current research activities include the development of smart materials, nano-sensors, nano-coatings, nano-membranes, and polymer nanocomposites for a variety of applications including aerospace and mass transit systems.</p>	<p>TEAM LEADER Professor Mervyn Kanny</p> <p>HOST Dept. of Mechanical Engineering Faculty of Engineering and the Built Environment</p> <p>CONTACTS kannyk@dut.ac.za +27 31 373 2230</p>
<p>COMPUTATIONAL MODELLING AND BIOANALYTICAL CHEMISTRY</p> <p>Computational Modelling and BioAnalytical Chemistry focus area comprises the following research groups in chemistry: Ionic Liquids, Synthetic Organic Medicinal Chemistry, Phase Equilibria and Environmental Chemistry. These being the primary research areas, have contributed to more than 95% of the research outputs in the Department of Chemistry for this reporting period. It is also noteworthy to mention that Chemistry has been the second most productive department in the FAS in terms of research and innovation. The strategic partnerships in research have been formed with various institutions, both locally and abroad.</p>	<p>TEAM LEADER Professor Vincent Bisetty</p> <p>HOST Department of Chemistry Faculty of Applied Sciences</p> <p>CONTACTS bisettyk@dut.ac.za +27 31 373 2311</p>

<p>ENZYME TECHNOLOGY</p> <p>The Enzyme Technology Research group at DUT, under the leadership of Prof. Suren Singh and Prof. Kugen Permaul, conducts research on the discovery, improvement, production and application of microbial enzymes. These enzymes have applications spanning agricultural, biomedical and industrial sectors. In addition to its expertise in screening, cloning and expression of enzymes and production by fermentative processes, the group is also researching the degradation of biological macromolecules to produce derivatives of industrial importance. Research in the area of Enzyme Technology currently follows a three-pronged approach:</p> <ul style="list-style-type: none"> • Investigation of the fundamental aspects associated with the production of fungal and bacterial enzymes, their characterisation and the modification of their characteristics to enhance industrial applications. • Investigation of the application of selected enzymes to produce various value-added products. • Development of <i>Thermomyces lanuginosus</i> as high expression level enzyme factory using molecular and bioinformatics methods and tools. 	<p>TEAM LEADER Professor Suren Singh</p> <p>HOST Department of Biotechnology and Food Technology Faculty of Applied Sciences</p> <p>CONTACTS surens@dut.ac.za +27 31 373 2721</p>
<p>FOOD AND NUTRITION SECURITY</p> <p>The focus of the research is to:</p> <ul style="list-style-type: none"> • Evaluate the cross-sectional effect of the three pillars of food security (food availability, food accessibility and food usage) on nutritional status (over-nutrition and under-nutrition) in vulnerable population groups in the greater Durban area and • to plan, develop and implement interventions to address needs identified in various communities. <p>The objectives of the Departmental focus area are in line with national and international policies addressing food and nutrition insecurity.</p>	<p>TEAM LEADER Prof Carin Napier</p> <p>HOST Department of Food and Nutrition Faculty of Applied Sciences</p> <p>CONTACTS carinn@dut.ac.za +27 31373 2326</p>
<p>INTERNATIONAL CENTRE OF NONVIOLENCE (ICON)</p> <p>ICON's mission is to make strategic interventions in education that challenge structural violence. These processes work to bring key changes in society – specifically supporting the creation of a culture of non-violence.</p> <p>Majority of the research projects in the programme are based on action research, which means that students not only explore a problem but design and implement an intervention to bring about change.</p>	<p>TEAM LEADER Professor Geoffrey Harris</p> <p>HOST Peace Studies / ICON Faculty of Management Sciences</p> <p>CONTACTS geoffreyh@dut.ac.za +27 31 373 5609 http://www.icon.org.za/current/</p>
<p>INSTITUTE FOR SYSTEM SCIENCE</p> <p>The Institute of Systems Science (ISS) was created from an existing Centre of Excellence to accomplish the following:</p> <ul style="list-style-type: none"> • Conduct high calibre research into real-world questions using multidisciplinary computational and mathematical systems methods. • Develop simulation and mathematical methods to help understand these questions. 	<p>TEAM LEADER Professor Kevin Duffy</p> <p>HOST Institute for System Science</p> <p>CONTACTS kevind@dut.ac.za +27 31 373 2828</p>

<p>Effect a technology transfer of the methods and perspectives used to a broad group of South Africans. People at all levels of education from high school to PhD level are targeted with appropriate courses.</p>	
<p>INSTITUTE FOR WATER AND WASTEWATER TECHNOLOGY (IWWT) The focus of the research is largely based on developing and optimizing technology for the treatment of water and wastewater, and green energy to satisfy the needs of industry and the community.</p> <p>Research projects are selected and designed in close consultation with industrial partners with the aim to help industries maintain acceptable levels of effluent discharges and to meet increasing energy requirements. This plays an essential role in reducing negative environmental impact and commercialization of products generated from waste streams.</p>	<p>TEAM LEADER Prof Faizal Bux</p> <p>HOST Institute for Water and Wastewater Technology</p> <p>CONTACTS faizalb@dut.ac.za +27 31 373 2346 https://www.dut.ac.za/iwwt/</p>
<p>PLANT BIOTECHNOLOGY The concept of growing crops for health rather than for food and fiber only is slowly changing plant biotechnology and medical related research. The research encompasses vegetative, generative and propagative technologies that extend ways to produce bio-chemical and pharmaceuticals from plants. The research focuses on the following:</p> <ul style="list-style-type: none"> • Bioactive compounds from plants for the treatment or prevention of HIV, TB, Malaria, Diabetes, Cancer and other infectious diseases; • Synthesis of novel pharmaceuticals • Nanotechnology for drug delivery • Value addition by producing novel food commodities. 	<p>TEAM LEADER Professor Bharti Odhav</p> <p>HOST Department of Biotechnology and Food Technology Faculty of Applied Sciences</p> <p>CONTACTS odhavb@dut.ac.za +27 31 373 5330</p>
<p>THE URBAN FUTURES CENTRE (UFC) The centre's aim is to be an intellectual and practical hub geared towards shaping urban spaces that are vibrant, resilient, accessible, egalitarian, caring and well-designed.</p> <p>The UFC sees its role as an action-oriented research hub operating at the highest international standards. It aims to think about, and shape, the future of cities in innovative ways; imagining, with a fresh lens, what cities such as Durban could and should look like in the next 50 to 100 years. The centre strives to achieve imaginative (non-traditional) solutions to urban challenges using a cross-disciplinary and networked approach.</p> <p>The UFC therefore brings together scholars, city officials and civic groupings to think through urban dilemmas and to find creative, participatory and humane ways of resolving them. The UFC tests out 'solutions' through practical interventions, utilising the wide range of DUT's capacity, skills, resources and partnerships, and to involve urban dwellers, particularly the most vulnerable and marginalised, in problem identification, resolution and planning.</p>	<p>TEAM LEADER Professor Monique Marks</p> <p>HOST Urban Futures Centre Faculty of Engineering and the Built Environment</p> <p>CONTACTS moniquem@dut.ac.za +27 31 373 2180 https://www.dut.ac.za/faculty/engineering/urban_futures/</p>
<p>EMERGING RESEARCH FOCUS AREAS</p>	
<p>MANAGEMENT STUDIES</p>	<p>TEAM LEADER Professor Renitha Rampersad</p>

	<p>HOST Faculty of Management Sciences</p> <p>CONTACTS renithar@dut.ac.za +27 31 373 6876</p>
<p>ENERGY</p> <p>The DUT Energy Technology Station known as “KZN Industrial Energy Efficient Training and Resource Centre” (IEETR), is based within the Physics Department, in the Faculty of Applied Sciences. The station was created in July 2012 and is funded by the Technology Innovation Agency (TIA) of South Africa to respond to the need for awareness, innovation, development, empowerment, entrepreneurship, research and technology transfer in energy efficiency and sustainable energy within KZN. Product design, prototype development, training, monitoring and verification in the energy field are services offered to industry. The centre has an Energy and Water SETA (EWSETA) accredited training centre and offers a variety of training courses at various exit levels in energy and water. The centre conducts research in various areas of renewable and sustainable energy.</p>	<p>TEAM LEADER Dr Ian J. Lazarus</p> <p>HOST Department of Mathematics, Statistics and Physics</p> <p>CONTACTS lazarusi@dut.ac.za +27 31 373 5358</p>
<p>ICT AND SOCIETY</p> <p>ICT and Society is committed to advancing the field of ICT by means of quality research. The core focus of the area research is developing contemporary and futuristic ICT innovations for foreseeable real-world problems and opportunities. ICT and Society supports quality research within the greater Computing discipline and multi-disciplinary master’s and PhDs.</p>	<p>TEAM LEADER Professor Oludayo O. Olugbara</p> <p>HOST Faculty of Accounting and Informatics</p> <p>CONTACTS oludayoo@dut.ac.za +27 31 373 5597</p>
<p>MATERNAL HEALTH</p> <p>The aim of the project is to respond to the Sustainable and Development Goals (SDGs) # 3 and 4, by decreasing maternal morbidity and mortality rates and ultimately align these goals to the burden of diseases and health systems responses in South Africa & other countries. The focus of the project is to determine the demographic, socio-economic, psychosocial, cultural, antenatal, obstetric, clinical and biochemical characteristics associated with maternal health and birth outcomes.</p>	<p>TEAM LEADER Professor Nokuthula Sibiyi</p> <p>HOST Faculty of Health Sciences</p> <p>CONTACTS nokuthulas@dut.ac.za +27 31 373 2032</p>
<p>TRANSFORMATION THROUGH THE ARTS AND DESIGN</p> <p>Our aim is to cultivate a faculty of arts and design that promotes multi-inter-transdisciplinary, decolonial and critical approaches to the teaching, output and trajectories of the arts and design, and humanities broadly speaking. Our research focuses on critical and creative arts, cultural work, pedagogy, practice and intellectual discourse that is socially engaged, responsible, historically and spatially situated, as well as dialogically focused in order to engage local and global discursive terrains, debates and movements.</p>	<p>TEAM LEADER Dr Maleshoane Rapeane-Mathonsi</p> <p>HOST Faculty of Arts and Design</p> <p>CONTACTS maleshoaner@dut.ac.za +27 31 373 5837</p>