

College of Agriculture and Environmental Sciences

Research focus areas for 2020: Department of Environmental Sciences

Focus area	Researchers in the focus area	Specialisation of researchers in the focus area	Profile of the researcher	Research project themes	Capacity per researcher for 2020
SOLID WASTE MANAGEMENT Contact Person Dr F Machete machef@unisa.ac.za	Dr F Machete E-mail: machef@unisa.ac.za	African indigenous systems of waste management	Dr Machete is a Senior Lecturer. He holds a PhD from the University of South Africa. His research focus is on improving services delivery, ending poverty, inequality and hunger through the exploration and documentation of African indigenous systems (AIS) of solid waste management for sustainable development. Methodology expertise: Mixed method research	Documentation of AIS of waste management <ol style="list-style-type: none"> 1. Documenting AIS of waste management. 2. Exploring the impacts of AIS of waste management on sustainable development goals (SDG's). 3. Comparative studies about the influence of AIS and western systems of refuse disposal on SDGs 	Masters: 3 PhD: 3
Environmental management	Roelien du Plessis dplers@unisa.ac.za	Waste management	Roelien du Plessis is a lecturer in the Department of Environmental Sciences, with a MSc obtained from	<ol style="list-style-type: none"> 1. Recycling initiatives. 2. Waste management in municipalities 	Masters: already have 9 – 0 new ones for 2019

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	Roelien du Plessis dplesr@unisa.ac.za		Unisa. Her expertise lies in the broad area of Environmental Management with a specific focus on Waste Management and licensing.		PhD: n/a
Environmental Pollution, Ecotoxicology and Remediation Studies (EPERS)	Prof M Tekere tekerm@unisa.ac.za	Environmental Microbiology/biotechnology Pollution and remediation	Prof Tekere is a full professor in the Department of Environmental Sciences. Her research experience and interests are in Environmental Biotechnology and Microbiology and her work focuses on bioremediation of pollutants as well as the study of microbial diversity in different habitats particularly extreme and polluted environments. Other areas of research interest include water quality, municipal and industrial waste water treatment and solid waste management.	<ol style="list-style-type: none"> 1. Microbial diversity in different environments and bioprospecting 2. Bioremediation research studies 3. Environmental pollution incl. emerging pollutant studies, water quality and waste management 	2 MSc 1 PhD
	Dr LL Sibali siballl@unisa.ac.za	Environmental/ Analytical Chemistry	Dr Sibali is a Senior Lecturer and Chair of Department: Environmental Sciences. His research focus area is based on chemical pollutants (e.g. Endocrine Disrupting Compounds (EDCs) in the environment).	Pollution monitoring and remediation of chemical pollutants in the environment.	PhD: 1 Masters: 4
	Mr ND Baloyi baloynd@unisa.ac.za	Environmental Chemistry	Mr Ntsako Baloyi is a Lecturer in the Department of Environmental	<ol style="list-style-type: none"> 1. Water quality monitoring 2. Persistent organic pollutants 	Masters : 3 PhD: 0

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			Sciences. He holds a Master's degree from Unisa. His research focus is Environmental pollution and monitoring. Methodology expertise: Qualitative research		
	Mr KW Maphangwa maphakw@unisa.ac.za	Environmental Monitoring and Assessment	Mr KW Maphangwa is a Lecturer in the Department of Environmental Sciences. He holds a Master's degree from University of the Western Cape.	Lichens as indicators of pollution Biodiversity of lichens in South Africa	Masters: 2 PhD: 0
	Mrs TC Fouché fouchtc@unisa.ac.za	Soil ecotoxicology	Mrs. T Fouché is a senior lecturer in Environmental sciences. She holds a Master's degree in Environmental sciences and is busy completing her PhD in Environmental Sciences. Her research focuses on investigating the impact of organic and inorganic pollutants on the soil ecosystems in terms of the ecotoxicological and genotoxic effects on beneficial soil organisms that provide soil functions. Other research interests include ecological remediation and rehabilitation.	<ol style="list-style-type: none"> 1. Assessing anthropogenic impacts (agricultural and chemical industry) on soil quality utilising bioindicator assays. 2. Assessing the phytoremediation ability of various crops on heavy metal polluted soil. 3. Ecological remediation and restoration. 4. Landscape function analysis 	Masters: 1
Environmental Sciences/Soil Science	Dr GP Nortje nortjgp@unisa.ac.za	Soil Science in Conservation. Human impact	Dr Gerhard Nortjé is a Senior lecturer in Soil Science/Environmental Science. He	<ol style="list-style-type: none"> 1. Human/Eco-tourist impacts on soil physical degradation in protected areas 2. Soil crusting/sub-soil compaction 	PhD: 2 MSc: 2

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		<p>on soils in protected areas.</p> <p>Soil rehabilitation.</p> <p>Soil surveys and road planning for Protected areas.</p> <p>Sub-tropical fruit production.</p>	<p>holds a PhD degree in Wildlife Management/Soil Science from the University of Pretoria, and a Master degree in Sustainable Agriculture from the University of the Free State. His research interests are the application of Soil Science in Conservation, Soil-Plant relationships, Eco-tourist's impacts on the soil/vegetation, Soil mapping for sustainable road planning and off-road driving in protected areas, Sustainable Subtropical fruit production and fertilization.</p> <p>Methodology expertise: Mixed-method research</p>	<ol style="list-style-type: none"> 3. Development of sustainable recreational activities in protected areas – MTB routes etc. 4. Soil/Plant relationships 5. Subtropical fruit production (avocado, macadamia) – production, fertilization, norms, stinkbug management 6. Soil rehabilitation 	
Innovation and capacity building in science and technology	VM Ngole-Jeme	Environmental Quality	<p>Prof VM Ngole-Jeme is a Professor in Environmental Sciences. She holds a PhD in Environmental Sciences from University of Botswana. Her Research focuses on monitoring and assessment of inorganic pollutants in the soil environment and evaluation of the environmental and human health risks associated with exposure to these pollutants</p>	<ol style="list-style-type: none"> 1. Assessing the effectiveness of extracellular segregation coefficient and intracellular organelles as indicators of Heavy metal pollution in various crops 2. Heavy metal uptake factors through various exposure routes 	<p>Masters: 0</p> <p>PhD : 0</p>

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Environmental Sciences and Management	Prof JA Wessels wessej@unisa.ac.za	Environmental Impact Assessment and Follow-up	Prof Jan-Albert Wessels is an associate professor in the Department of Environmental Sciences. He holds a PhD from the North-West University. His research focus on human capital development and capacity building through establishing Environmental Impact Assessment (EIA) follow-up as a measure of enhancing the scientific contribution of environmental impact assessment and management to sustainability compliance. Methodology expertise: Mixed-method research	Enhancing EIA Follow-up in Environmental Impact Assessment and Management Systems (EIAMS) 1. Defining the roles and responsibilities of Actors in EIA Follow-up 2. Determining the value of independent and community based monitoring and verification Actors 3. Regulating the professionalism of Actors in EIA Follow-up of sustainability commitments	Masters: 1 PhD: 0
	U van den Berg	EIA Impact management IEM Environmental Frameworks and Policies	Mrs Unine van den Berg is a lecturer in the Department of Environmental Sciences. Her research focus is IEM and impact mitigation management.		0
Environmental Management	Prof K Mearns	Sustainable tourism Nature-based tourism Community-based natural	Prof Kevin Mearns is a full professor in the Department of Environmental Science. Prof Mearns hold a PhD degree from the University of Portsmouth in the United Kingdom. Prof Mearns'	1. Water/Waste and Energy Benchmarking of Nature-based tourism 2. Community-based natural Resource Management with emphasis on tourism. 3. Coastal and Marine tourism	Masters: 2 PhD:1

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		resource management	research interests include the sustainability of tourism (including social, economic and environmental aspects), the social dimensions of conservation areas, ecotourism, community-based tourism and community-based natural resource management. Methodology expertise: Mixed-method research		
	Ms M Baker	Environmental management, Sustainable management of fresh water resources, Sustainable tourism	Melissa Baker is a Lecturer at the University of South Africa (Unisa) and currently lectures Environmental Management; in the Department of Environmental Science. She studied at University of Johannesburg, where she completed her undergraduate degree in tourism development in 2010. As an undergraduate student she was a triple major; taking geography as her third major. While studying geography she was introduced to the field of environmental management during her Honours degree; which she completed in 2011. This led to a new field of interest and in 2013 She graduated with a Master's	<ol style="list-style-type: none"> 1. Local economic dependence on Adventure tourism, climate vulnerability of tourism sector to climate change. 2. Trail running tourism in South Africa. 	Master: 1

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			<p>degree in Environmental Management; at the University of Johannesburg. She is currently registered for her PhD in Environmental Management at Unisa. Her areas of interest are environmental management, fresh water resource management and sustainable tourism development.</p> <p>Methodology expertise: Mixed-method research.</p>		
Environmental management	Dr M Chitakira	Society-environment interaction: Ecoagriculture	<p>Dr M Chitakira is a senior lecturer in the Department of Environmental Sciences at Unisa. Dr Chitakira holds a PhD in Environment and Society from the University of Pretoria, a Master's in environmental Policy and Planning and a Post-graduate Diploma in Education from the University of Zimbabwe. Dr Chitakira's research interest is in the dynamics of the interaction between human beings and the biophysical environment with a focus on multifunctional landscapes management; climate-smart agriculture; climate-smart livelihoods; gender and the</p>	<ol style="list-style-type: none"> 1. Urban agriculture in Africa – in relation to sustainable development, food security, resilience and adaptation to climate change; 2. The youths and farming; 3. Climate-smart agriculture – critical success factors in the African context; 4. Stakeholder engagement in environmental management. 	PhD : 1 MSc : 1

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			environment and transfrontier conservation areas management.		
Plant and Soil	Dr L Khomo	Soil biochemistry	I work on the biogeochemistry of soil, plant and animal interactions in natural ecosystems	1. Anything related to plant, soil and animal dynamics in natural ecosystems.	Masters: 2 PhD: 2
Environmental management / Environmental sociology	Prof L Leonard		Prof Leonard is a full professor in the department of Environmental Sciences. Prof Leonard has an MSc Civil Engineering (Water Quality and Environmental Management) from the University of Durban Westville (now KwaZulu-Natal), South Africa and a PhD from Kings College London. His research interests include environmental justice and sustainability with focus on democracy and governance; civil society-state-industry relations. Before joining academia he worked on environmental justice issues related to industrial, medical and municipal waste, landfills, mining, air pollution, incineration, cleaner production techniques and obsolete pesticides to name a few	<ol style="list-style-type: none"> 1. Civil society-state-industry conflicts over the environment and development. 2. Industrial development impacts on tourism/conservation areas 3. Climate change and sustainable livelihoods 4. Governance of the environment 	Masters: 9 PhD: 5

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Climate change Mitigation and Adaptation in mostly urban settings	A/Prof Hennie Stoffberg Stoffh@unisa.ac.za	Urban forestry and landscape dynamics Landscape architecture and green infrastructure Vegetative carbon accounting and carbon commerce Selected carbon footprints	Hennie Stoffberg is an Associate Professor specialising in vegetative carbon sequestration and accounting mostly in urban environments. He holds a PhD in Urban forestry, Masters of Environmental Sciences and Bachelor in Landscape architecture. Prof Stoffberg is ideally suited to work across disciplines and in multidisciplinary environments that include for example vegetation carbon footprints. Qualitative methodologies are required. He holds a C3 NRF rating with more than 200 citations and his research profile may be viewed at: https://scholar.google.co.za/citations?hl=en&user=64yvgHMAAAAJ	<ol style="list-style-type: none"> 1. Urban forest analysis in previously disadvantaged environments 2. Urban carbon sequestration, storage and commerce 3. Tree inventories 4. Carbon footprints 	PhD: 1
Energy and Air pollution	Ms K Semanya semenk@unisa.ac.za 0114712138	Household energy	Ms K Semanya is a lecturer in the Department of Environmental Sciences, With MSc from UNISA. Her research focus is household energy in rural areas.	<ol style="list-style-type: none"> 1. Drivers of Household energy 2. Pollution caused by the use of alternative fuel materials 3. Health and Environmental impacts caused by alternative full material. 	Masters : 3
Remote Sensing of the Environment	M Jordaan jordam@unisa.ac.za	Satellite Image Analysis	Mr M Jordaan is a lecturer in the Department of Environmental Sciences, With MSc from UJ. His	<ul style="list-style-type: none"> • Spectral analysis of vegetation • Accuracy assessment of remote sensing methods 	Masters: 2

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			research focus is remote sensing for environmental applications.	<ul style="list-style-type: none"> Remote Sensing applications for conservation purposes 	
Environmental Management	Dr M Togo		<p>Dr M Togo is a Senior Lecturer in the Department of Environmental Sciences. She holds a PhD from Rhodes University. Her research focus is on the broad area of Environmental Management with a specific focus on responses to climate change impacts and adaptive (green) responses in various sectors (policy and practice).</p> <p>Methodology expertise: Mixed-methods research</p>	<p>Greening initiatives in response to climate change impacts (policy and practice)</p> <ul style="list-style-type: none"> Green transportation in Higher Education institutions SDG implementation in Universities Household WEF challenges, coping strategies and nexus greening and the role of Universities 	
Environmental Sciences Contact person: Me HJ van Niekerk vniekhj@unisa.ac.za	Me HJ van Niekerk vniekhj@unisa.ac.za	Environmental Geology	Mrs HJ van Niekerk is a lecturer in the Department of Environmental Sciences. She holds post graduate qualifications in Environmental Geology and Distance Education. Her research experience and expertise are on sedimentology, isotopic geochemistry (detrital zircon U-Pb geochronology, Nd and Sr), and geological block modelling. Her work focuses on the	<ol style="list-style-type: none"> Effects of Pliocene-Pleistocene climatic changes on the evolution of the Limpopo and Zambesi Rivers, Southern Africa Geoparks in South Africa 	Already at full capacity for 2019

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			<p>provenance and palaeo-depositional environments of sedimentary basins, and the development of drainage basins in Africa. Other areas of interest includes whole rock and mineral geochemistry and water related issues.</p> <p>Methodology expertise: Qualitative research/ case study research</p>		
	Dr Lindani Ncube ncubel@unisa.ac.za	Environmental Geology	Dr L Ncube is a Lecturer in the Department of Environmental Sciences. She holds a PhD in Geology from the University of Fort Hare. Her research experience and expertise are on sedimentology, isotopic geochemistry (detrital zircon U-Pb geochronology, Nd and Sr), and geological block modelling. Her work focuses on the provenance and palaeo-depositional environments of sedimentary basins, and the development of drainage basins in Africa. Other areas of interest includes whole rock and mineral	<ol style="list-style-type: none"> 1. Effects of Pliocene-Pleistocene climatic changes on the evolution of the Limpopo and Zambesi Rivers, Southern Africa 2. Geoparks in South Africa 	Already have Masters: 4 PhD: 2 Capacity for 2019: Masters:1

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			geochemistry and water related issues. Methodology expertise: Qualitative research/ quantitative research		
Air Pollution and Health Effects	Ms Nomsa Thabethe ethabend@unisa.ac.za 011 471 2349	Air Quality, Human Health Risk Assessment, Atmospheric Modeling	Nomsa Thabethe is a Lecturer in the Department of Environmental Sciences. She holds two Masters degrees, one in Environmental Health from Tshwane University and the other in Epidemiology from University of Pretoria.	<ol style="list-style-type: none"> 1. Ambient particulate Monitoring 2. Particle size characterisation and chemical composition 3. Estimation of human airway particle dosimetry 4. Air Quality and Poverty 	Msc: 1
Water Science and Policy	Ms Malebo Matlala	Water Quality Monitoring,	Ms Matlala is a lecturer in the Department of Environmental Sciences. She holds an MSc Degree in Botany (Water Science- focusing on the use of diatoms to monitor water quality), from the North-West University, an LLM Degree in Water Law from the University of Dundee, and she is currently busy with her PhD which combines Water Science and Water Law, with the aim of influencing Water Policy. She is interested in biomonitoring of aquatic ecosystems, as well as the use of GIS and Remote Sensing	<ol style="list-style-type: none"> 1. Water Quality Monitoring 2. Transboundary Water Governance 3. GIS and Remote Sensing applications in water studies 4. Groundwater monitoring 5. Aquatic Ecology 	2 MSc students

			techniques to monitor groundwater variability over time.		
Green infrastructure	Ms Liezl Craig craigl@unisa.ac.za	Low Impact Development	Ms Liezl Craig is a lecturer in the Department of Environmental Sciences. She has a background in landscape architecture and holds a Master's degree in Integrated Water Management from Monash South Africa. She is currently enrolled for a PhD with North-west University in Development and Management for Water Studies. Her research focus is on the use of green infrastructure in the South African context.	<ol style="list-style-type: none"> 1. Diffusion of green infrastructure in South Africa 2. Sustainable stormwater management 3. Integrated urban water management 4. Value of green open spaces 5. Knowledge transfer on green infrastructure 	Masters: 1
Environmental Molecular Microbiology and Biotechnology	Dr Selvarajan Ramganesh selvar@unisa.ac.za	Microbiology, Molecular Biology, Microbial Ecology, Bioinformatics, Biotechnology	Dr Selvarajan Ramganesh is a fixed term lecturer in the Department of Environmental Sciences. His research focus on Microbial ecology from different ecosystems (Air, Water and Soil). He is trained molecular biologist including the areas Metagenomics and Bioinformatics' analysis. He is also focussing the environmental water monitoring and assessment of toxic heavy metals in fishes.	<ol style="list-style-type: none"> 1. Rhizosphere Microbial communities 2. Seaweed and Sponge microbial communities 3. Bacterial communities in AMD, Saltpans and industrial wastewaters. 4. Fungal diversity in WWTPs 5. Assessment of toxic heavy metals in popular fishes 	Masters: 2 PhD:0