College of Agriculture and Environmental Sciences

Research focus areas for 2024: Department of Environmental Sciences

Environmental Management and Environmental Sciences Programme Group

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 2024
	Prof Tracey McKay	Green infrastructure. Buy back centers. Sustainable tourism (esp economic sustainability). Sustainable transportation	Prof McKay is an Ass Prof with a PhD from UJ. Her research interests are tourism, education and environmental management. **Methodology expertise:** Qualitative, quantitative and Mixed- method research	1. Urban parks and conservation areas. 2. Sustainable streets. 3. Business case of buy back centres. 4. Economic sustainability of small-scale tourism enterprises. 5. Commuting	MSc: 1 PhD: 1
Environmental Management	Prof K Mearns mearnkf@unisa.ac.za	Sustainable tourism Nature-based tourism Coastal and Marine tourism Community-based natural resource management People and protected areas Marine protected areas	Prof Kevin Mearns is a full professor in the Department of Environmental Science. Prof Mearns holds a PhD degree from the University of Portsmouth in the United Kingdom. Prof Mearns' research interests include the sustainability of tourism	1. Water, waste and Energy Benchmarking of Nature-based tourism 2. Community-based natural Resource 3. Environmental Management with emphasis on tourism. 4. Coastal and Marine tourism 5. Marine and protected areas 6. People and protected areas nexus	MSc: 3 PhD:2

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			(including social, economic and environmental aspects), the social dimensions of conservation areas, ecotourism, community-based tourism and community-based natural resource management. **Methodology expertise:** Qualitative and Mixed-method research		
	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 focuses 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:** Qualitative and Mixed-method research	1. Enhancing EIA Follow-up in Environmental Impact Assessment and Management Systems (EIAMS) 2. Defining the roles and responsibilities of Actors in EIA Follow-up 3. Determining the value of independent and community-based monitoring and verification Actors 4. Regulating the professionalism of Actors in EIA Follow-up of sustainability commitments	MSc: 2 PhD: 1
	Dr U van den Berg	Systematic literature reviews on environmental management matters	Dr Unine van den Berg is a lecturer in the Department of Environmental Sciences. Her research focus is systematic literature reviews on environmental management matters		MSc: 1

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			impact mitigation management.		
	Ms A Mudau	Environmental management, Sustainable management of freshwater resources, Geology	Ms Mudau is a Lecturer in the Department of Environmental Sciences. She holds an Applied Geology Master's degree from the University of the Western Cape. She is currently registered for her PhD in Environmental Sciences at Unisa. Her research interest is environmental management, freshwater resource management, and air quality	1. Ambient air quality 2. Source Apportionment 3. Sustainable management of Freshwater resources 4. Water quality	MSc: 1

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	Dr M Togo		Prof M Togo is an Associate Professor in the Department of Environmental Sciences. She holds a PhD from Rhodes University. Broadly, her research focus is on Environmental Management, but specifically focusing on adaptation to climate change in the context of the Green economy and the SDGs - policies and practices for a green economy **Methodology expertise:** Mixed-methods research	Adaptive green responses to climate change impacts in various sectors of the economy for example in industry and universities. Water energy and food nexus greening at household level.	1PhD 2MSc
	Prof M Chitakira	Society-environment interaction: integrated landscapes management	Prof M Chitakira is an Associate Professor in the Department of Environmental Sciences at Unisa. He holds a PhD in Environment and Society and a Masters in environmental Policy and Planning. His research interest is in the dynamics of the interaction between human beings and the biophysical environment with a focus on climate smart landscapes management (climate-smart agriculture; climate-smart livelihoods); and stakeholder engagement.	1. Climate smart and pandemic resilient livelihoods for rural / urban / peri-urban communities. 2. Rural landscapes restoration: reforestation / agroforestry 3. Stakeholder engagement in environmental management.	MSc: 1 PhD: 1

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Environmental management /Environmental sociology	Prof L Leonard		Prof Leonard is a full Professor in the department of Environmental Sciences. Prof Leonard has an MSc (Water Quality and Environmental Management) from the University of KwaZulu-Natal 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.	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 5. Science communication and industrial expertise	Masters: 3 PhD: 1

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Water Science and Policy	Dr Malebo Matlala	Water Quality Monitoring, International water law and policy	Dr Matlala is a lecturer in the Department of Environmental Sciences. She holds a PhD from the university of South Africa, an LLM in Water Law from the University of Dundee, in Scotland, as well as an MSc from the North-West University. Dr Matlala's research focuses on the assessment and monitoring of water resources, the protection, management and governance of water resources, as well as the application of geographical information systems, remote sensing, and machine learning techniques in water studies.	1. Aquatic Ecology 2. Spatio-temporal variations in water resources 3. Water Quality Monitoring 4. Transboundary Water Governance 5. GIS and Remote Sensing and machine learning 6. Applications in water studies	MSc: 3

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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 research focus is remote sensing for environmental applications.	1. Spectral analysis of vegetation 2. Accuracy assessment of remote sensing methods 3. Remote Sensing applications for conservation purposes	MSc: 1
Earth Observation, and Environmental & Agricultural Remote Sensing	Mrs YW Chabalala echabayw@unisa.ac.za	Earth Observation, Remote Sensing and GIS	Mrs Chabalala is a lecturer in the Department of Environmental Sciences. She holds a Masters in Remote Sensing and GIS from University of Witwatersrand and is a PhD student at University of Witwatersrand. She also hold an honours degree in Geography from UNISA, and a Bachelor's degree in Environmental Science from University of Venda. Her research focus is remote sensing for environmental and agricultural applications .	1. Remote Sensing (Optical and radar data & data fusion) applications for agricultural and environmental modelling. 2. Grass nutrients estimation and mapping animal movement 3. Crop types, Fruit trees and urban trees mapping 4. Applying machine learning and deep learning techniques for environmental and agricultural mapping & modelling using different software (Google Earth Engine, R Studio, Erdas, ArcGIS,Python,ENVI, etc)	MSc:1
Environmental Science and Environmental Management	Dr K Semenya semenk@unisa.ac.za	Household energy	Dr K Semenya is a Senior Lecturer in the Department of Environmental Sciences. Her research focus is household Energy and air pollution in rural areas.	1. Sustainable energy 2. Sustainable development 3. Air quality 4. Exposure and health assessments.	MSc: 2 PhD:1
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	1. Microbial diversity in different environments and bioprospecting 2. Pollution Bioremediation research studies 3. Environmental pollution incl. emerging pollutant studies, water quality and waste	MSc: 2 PhD: 2

			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.	management	

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	Prof LL Sibali siballl@unisa.ac.za	Environmental/ Analytical Chemistry	Prof Sibali is an Associate Professor and Director: School of Ecological and Human Sustainability. His research focus area is based on the emerging chemical pollutants in the Environment.	Pollution monitoring and remediation of emerging chemical using polymeric composite nanoparticles materials.	9 MSc 10 PhD
	Dr TC Fouché fouchtc@unisa.ac.za	Ecotoxicology/ Soil Science	Dr T Fouché is a senior lecturer in the Department of Environmental Science. She holds a PhD in Environmental Science from the NWU and teaches Ecotoxicology. Her research focuses on soil ecotoxicology. Other research interests include soil health, bioremediation and phytoremediation.	1. Ecotoxicological studies in soil and water. 2. Soil biodiversity – their contributions to ecosystem functions and ecosystem restoration. 3. Phytoremediation potential of various crops in polluted soil.	MSc: 2 PhD: 1
	Dr KW Maphangwa maphakw@unisa.ac.za	Environmental Monitoring and Assessment	Dr KW Maphangwa is a Lecturer in the Department of Environmental Sciences. He holds a Master's degree from University of the	1. Plants as indicators of pollution 2. Plants as indicators of heavy metals 3. Air and water quality monitoring	MSc: 3

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			Western Cape and PhD in Environmental Science from UNISA		
Environmental Pollution, Ecotoxicology and Remediation Studies (EPERS)	Mr ND Baloyi baloynd@unisa.ac.za	Environmental/Analytical Chemistry	Mr Ntsako Baloyi is a Lecturer in the Department of Environmental Sciences. He holds an MSc degree from Unisa. His research focus is Environmental pollution monitoring and remediation.	1.Water quality monitoring 2.Persistent organic pollutants such as ECDs in the environment 3. Emerging pollutants	MSc: 3
Environmental Soil Science, Pollution studies and Exposure Health Risk Assessment	Prof VM Ngole-Jeme	Environmental soil chemistry

Heavy metal behavior in soils

Exposure risk assessment

Emerging pollutants in the environment | 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. She has vast experience in the characterization of heavy metals and emerging pollutants in various environmental media. | 1. Recovery of environmental pollutants from remediation materials 2. Human health risk assessment of heavy metal 3. Interaction between Endocrine Disruptive Compounds and Heavy metals in the soil environment. | MSc: 4 PhD: 1 |

| Air Pollution and Health Effects | Ms Nomsa Thabethe ethabend@unisa.ac.za | Air Quality | Nomsa Thabethe is a Lecturer in the Department of Environmental Science. She holds 2 Masters degrees, one in Environmental health (Tshwane University of Technology) and the other one in Epidemiology (University of Pretoria). She is currently studying towards a Phd in Exposure Science/ Public Health with the University of the Witwatersrand. Her research interests are air quality monitoring, air quality modeling, Environmental health | 1. Ambient air Monitoring
2. Air quality modelling
3. Source apportionment
4. Chemical apportionment
5. Environmental Health
6. Human Health Risk Assessment | MSc: 2 |

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Environmental Sciences/Soil Science	Dr GP Nortje nortjgp@unisa.ac.za	Soil Science in Conservation/Eco-tourism. Human impact on soils in protected areas. Soil rehabilitation. Soil surveys and road planning for Protected areas. Sub-tropical fruit production. Soil fertilization in Conservation Agriculture .	Dr Gerhard Nortjé is a Senior lecturer in Soil Science/Environmental Science. He 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. **Methodology expertise:** Mixed-method research	1. Human/Eco-tourist impacts on soil physical degradation in protected areas 2. Soil crusting/sub-soil compaction – Development of sustainable recreational activities in protected areas-MTB routes etc. 3. Protected area management 4. Soil/Plant relationships 5. Subtropical fruit production (avocado, macadamia) – production, fertilization, norms, irrigation, stinkbug management. 6. Soil rehabilitation/soil mapping & classification 7. Sustainable soil management. 8. Diagnosis and Recommendation Integrated System (DRIS) to assess the Nutritional State of crop plants 9. Conservation Agriculture (CA).	MSc: 2 PhD: 1
Plant and Soil	Dr L Khomo	Soil biochemistry	I work on the biogeochemistry of soil, plant and animal interactions in natural ecosystems	Anything related to plant, soil and animal dynamics in natural ecosystems.	MSc: 2 PhD: 2

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Environmental Geology	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 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. **Methodology expertise:** Qualitative research/ case study research	1. Effects of Pliocene-Pleistocene climatic changes on the evolution of The Orange, Limpopo and Zambesi Rivers, Southern Africa 2. Geoparks in South Africa 3. Water Legislation in SA 4. Development and application of a SuperCaesar model using machine learning	MSc: 4
	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	1. Climate change and drainage systems development 2. Sedimentary basin evolution 3. Application of stable isotopes and geochronology in understanding magma evolution in different Islands 4. Machine learning and modeling of land surfaces	MSc: 2 PhD: 3

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			Sr), geological modelling, marine geology and sustainability. Her work focuses on the provenance and palaeo- depositional environments of sedimentary basins, hydrocarbon deposits, magma evolution onset of glaciation in the Southern Sea. and the development of drainage basins in Africa. Other areas of interest include marine geology and sustainable energy. **Methodology expertise:** Qualitative research/ quantitative research	5.Geological surveys for offshore wind sites (generation of electricity through wind farms in bodies of water-usually sea) 6. Marine geology 7. Geoparks in Southern Africa 8. Water Legislation and guidelines in SA	
Wetland ecology	Mr, M. Mogashoa	Wetland identifications, assessments and classification.	I am a Lecturer at the Department of Environmental Sciences. My background is in Geology, ultimately branching into wetlands and associated systems.	Wetland assessment and classification Species diversity assessment in wetlands Hydrogeomorphic assessment of wetlands	MSc: 1

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