

Faculty of Engineering and the Built Environment

2019 FIELD OF EXPERTISE and area of involvement of staff members

Staff member	Department/CITSI	Field of expertise and area of involvement
Abe, BT, Dr (Bolanle)	Electrical Engineering (eMalahleni Campus)	Machine learning and image processing Telecommunication Electromagnetic compatibility
Adegbola, TA, Dr (Adesola)	Mechanical Engineering, Mechatronics and Industrial Design	Material science Material characterisation Polymer blends Polymer waste recycling process Mechanical testing (toughness, flexural, and tensile strength) Systems engineering
Adeleke, AA, Dr (Abraham)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Mineral processing Hydrometallurgy
Abu-Mahfouz, A, Dr (Adnan)	Electrical Engineering / F'SATI – Adjunct appointment	Internet of Things (IoT) Wireless sensor network (WSN) Software defined networking (SDN) Low-power wide-area networks (LPWAN) 5G for IoT Network security
Akumu, OA, Dr (Aloys)	Electrical Engineering (eMalahleni Campus)	High-voltage engineering Condition-based maintenance Power systems demand side management
Anochie-Boateng, J, Dr (Joseph)	Civil Engineering – Adjunct appointment	Pavement engineering Pavement materials testing and modelling Asphalt technology and mix design Laser technology in crushed stones for roads and railways

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		Construction waste materials in pavements Transport infrastructure engineering
Agumba, JN, Dr (Justus)	Building Sciences	Sustainability of small and medium contractors Modelling health and safety in construction Project management in construction Construction management Technology use and innovation (artificial intelligence) Sustainable construction Construction education
Beneke, LW, Dr (Louis)	Mechanical Engineering, Mechatronics and Industrial Design	Composite materials Wind turbines
Butala, P, Dr (Peter)	Industrial Engineering – Adjunct appointment	Manufacturing systems Mechatronic systems Information systems in production Application of big data in manufacturing Product-service systems
Chowdhury, SP, Prof (Daniel)	Electrical Engineering	Sustainable and renewable energy Microgrids and smartgrids Energy and demand management Power electronics in microgrid operations and battery management Power system analysis and control Harnessing green energy from Agulhas Current Distribution system planning Distributed generation and grid Integration Sustainable strategy for higher education, etc.
Delport, DJ, Dr (Dawie)	Chemical, Metallurgical and Materials Engineering	Cement Hydrogen Oxygen electrolysis
Desai, DA, Dr (Dawood)	Mechanical Engineering, Mechatronics and Industrial Design	Structural dynamics (vibration) Fatigue Vibro-acoustics Finite element analysis Infrared Thermography
Diehl, W, Prof (Wolfgang)	Chemical,	Thin-film physics

Staff member	Department/CITSI	Field of expertise and area of involvement
	Metallurgical and Materials Engineering – Adjunct appointment	Surface engineering/coating technologies
Djouani, K, Prof (Karim)	Electrical Engineering and F'SATI	Modelling Optimisation and control of networked nonlinear systems Mobile and wireless communication systems
Du, S, Prof (Shengzhi)	Electrical Engineering / F'SATI	Brain-computer interface Control systems Haptic feedback teleoperation control Assistive technology Image processing Bio-mechatronics Smart technology
Fayomi, OSI, Dr (Ojo)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Surface engineering/coating technologies Electrochemical corrosion Advanced manufacturing technology Physical metallurgy and materials characterisation
Gebhardt, A, Prof (Andreas)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Additive manufacturing and 3D printing Laser material processing
Gochermann, J, Prof (Josef)	Industrial Engineering – Adjunct appointment	Entrepreneurship and business planning Innovation and technology management Product and service development Marketing
Hamam, Y, Prof (Alex)	Electrical Engineering and F'SATI – Adjunct appointment	Modelling Graphs and networks Linear, nonlinear and mixed-integer optimisation Control systems Power systems Image processing Water distribution networks analysis, operation and planning
Huan, Z, Prof (Zhongjie)	Mechanical Engineering, Mechatronics and Industrial Design	Energy-efficient technology for commercial refrigeration Heat pump system development

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		Application for space and water heating and biomass drying Natural working fluids for refrigerant substitution Waste heat recovery Energy management
Jacobs, SJ, Dr (SJ)	Office of the Dean and Technology Station in Electronics (TSE)	Skills development programmes for the electronic manufacturing sector Digital skills development for future job programmes Technical skills development for community-based business creation Technology transfer and incubation Renewable energy skills training and incubation programmes Incubation support in manufacturing technologies Concept to prototype Product development Electronic/electrical re-manufacturing Quality management systems
Jamiru, T, Dr (Tamba)	Mechanical Engineering, Mechatronics and Industrial Design	Properties of high-performance composites and high-strength alloys New engineering materials development Characterisation and optimisation Green technology Phase transformation and nanotechnology
Jordaan, JA, Prof (Jaco)	Electrical Engineering (eMalahleni Campus)	Signal processing Mathematical modelling Spectral estimation Power system state estimation Optimisation Microcontroller and PC software design, electrical power and industrial systems and control Image processing Machine intelligence
Khoathane, MC, Prof (Caroline)	Office of the Dean and Chemical, Metallurgical and Materials Engineering	Polymer/biopolymer reinforced natural fibre composites

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Kolesnikov, AV, Prof (Andrei)	Chemical, Metallurgical and Materials Engineering	Modelling and simulation of multiphase flows in chemical and mineral processing industries Nanotechnology Plasma technology Computational fluid dynamics Chemical and mineral process control Optimisation of chemical processes
Kupolati, WK, Prof (Williams)	Civil Engineering	Sustainable and appropriate use of waste materials for civil engineering infrastructure Nanostructure of cement, concrete and advanced construction materials Intelligent transportation Management Environmental and structural systems Application of artificial neural network Fractal and chaos and other novel theories in civil engineering infrastructure Application of technology to power entrepreneurs in civil engineering
Kurien, AM, Prof (Anish)	Electrical Engineering and F'SATI	Software development Radio resource management Wireless and mobile networks
Laubscher, J, Prof (Jacques)	Architecture	Sustainability and resource consumption in the built environment The application of the National Building Regulations (SANS 10400) Modernist architecture Pedagogic underpinning of design and architectural education
Le Roux, PF, Dr (Peet)	Electrical Engineering	Power system analysis Transmission and distribution protection schemes Power system planning Substation Design Arc-flash protection Network stability and control schemes Power factor correction (FACTS) Renewable energy
Magidi, JT, Dr (James)	Geomatics	Geographical information systems/science (GIS)

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		Remote sensing and photogrammetry Global change (land-use change) Geodesy and map projections, and surveying (land and engineering) Application of GIS and remote sensing in urban dynamics, agriculture and landscape ecology
Maré, EA, Prof (Estelle)	Architecture – Adjunct appointment	Art and architectural history
Mbaya, RKK, Prof (Richard)	Chemical, Metallurgical and Materials Engineering	Mineral beneficiation Hydrometallurgy Separation technologies and nanotechnology Mine water treatment and waste management
Mhike, W, Dr (Washington)	Chemical, Metallurgical and Materials Engineering	Polymer processing, polymer additives technology and graphite nanocomposites
Molnár, K, Dr (Kolos)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Polymer nano- and microfibers Electrospinning Polymer materials science and physics
Mpofu, K, Prof (Khumbulani)	Industrial Engineering	Advanced manufacturing Cleaner production Expert systems Robotics in manufacturing
Munda, JL, Prof (Josiah)	Office of the Dean, Electrical Engineering and Centre for Energy and Electric Power (CEEP)	Power systems Distributed generation Renewable energy supplies Smart grids Energy and industrial power systems
Ndambuki, JM, Prof (Julius)	Civil Engineering	Water resources management Optimisation Multi-objective programming Decision-support systems Stochastic optimisation Water quality and quantity modelling
Nnachi, AF, Dr (Francis)	Electrical Engineering (eMalahleni Campus)	Power electronics, electrical machines and drives Energy conversion systems Power quality

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Oboirien, BO, Dr (Bilainu)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Fluidisation, gasification Oxy-combustion Waste to energy and geopolymer production Power to gas
Olwal, TO, Prof (Thomas)	Electrical Engineering and F’SATI	Green smart ubiquitous-radio networks (green SUN) for sustainable development Distributed and decentralised algorithms in green SUN for sustainable development Artificial computational intelligence Cognitive radio networks Software defined networking Green Internet of Things
Onyango, MS, Prof (Maurice)	Chemical, Metallurgical and Materials Engineering	Nanotechnology Adsorption Water treatment
Osman, AOS, Prof (Amira)	Architecture	Housing design Housing finance Housing theory Housing policy Urban policy Social housing Informal settlements and upgrading Community-based architecture Open building 4D design Time-based design Sustainable building transformation Design: Theory and methods Sudanese Modernism Sudanese built environment history Sudanese housing finance
Paige-Green, P, Dr (Philip)	Civil Engineering – Adjunct appointment	Construction materials Soil mechanics Rock mechanics Soil stabilisation and improvement Engineering geology

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		Low-volume road design, construction and investigation Unpaved road materials, design and maintenance Soil compaction Concrete technology Mine haul roads Recycling of waste materials in construction Climate change adaptation for transport infrastructure Pavement failure forensic investigations and technical audits
Popoola, API, Prof (Patricia)	Chemical, Metallurgical and Materials Engineering	Physical metallurgy Laser materials processing Pyrometallurgy Properties of engineering materials Nanotechnology
Popoola, OM, Dr (Wale)	Electrical Engineering and Centre for Energy and Electric Power	Energy management and demand side management Computational intelligence in energy usage analysis Energy and behaviour Renewable and sustainable energy Quality management (special focus on continual improvement in learning organisations), Power electronics application in power systems, and laser applications Power systems
Premlall, K, Dr (Kasturie)	Chemical, Metallurgical and Materials Engineering	Carbon utilisation and sequestration technologies (CCUS) – coal sorption Corrosion mechanisms and corrosion inhibition Lead processing recovery techniques Water treatment technology
Richards, CG, Dr (Coneth)	Electrical Engineering (eMalahleni Campus)	Electrical power converters
Sadiku, ER, Prof (Rotimi)	Chemical, Metallurgical and Materials Engineering	X-ray physics and rheology of polymers and polymer composites
Salim, RW, Prof (Wanjala)	Civil Engineering	Self-compacting concrete Concrete as a carbon dioxide sink Affordable/low-cost housing

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		Structural behaviour of biomaterials Health monitoring of structures Cellular light-weight concrete elements Laboratory simulation fibre-reinforced polymer in the form of either rebar, strip or matrix in structural elements and environmental solid waste management for environmental sustainability Reuse of solid/powder waste material in construction
Snyman, J, Prof (Jacques)	Civil Engineering	Water engineering: Hydraulics, hydrology, water and wastewater treatment technology, water recourse planning and management Environmental engineering: Solid waste management and environmental impact assessment and management
Steyn, GS, Prof (Gerald)	Building Sciences	Settlement dynamics Vernacular African architecture and urbanism Affordable housing Forensic auditing of buildings Planning and aesthetic guidelines
Steyn, N, Dr (Nico)	Electrical Engineering and F'SATI	Process and automation Enabling technology
Swanepoel, JA, Dr (Jan)	Industrial Engineering	Engineering and operations management Project management Operations and production scheduling Energy management
Talukhaba, AA, Prof (Alfred)	Building Sciences	Sustainable construction Energy efficiency in buildings Carbon indexing and cost modelling Financial engineering for construction projects Construction law and alternative dispute resolution Business modelling for emerging contractors
Tlale, N, Dr (Nkgatho)	Industrial Engineering – Adjunct appointment	Advanced manufacturing Mechatronics Robotics
Trimble, JA, Prof (John)	Industrial Engineering	System dynamics Appropriate technology Supply chain management

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		Discrete simulation Knowledge management
Van der Bruggen, B, Prof (Bart)	Chemical, Metallurgical and Materials Engineering – Adjunct appointment	Membrane technology Water treatment and separation technologies
Van Wyk, BJ, Prof (Ben)	Office of the Dean	Machine intelligence and image analysis