

DSTI & UKZNF SPARK KZN WORKSHOP 24 JUNE 2026, UKZN GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP, WESTVILLE CAMPUS

FULL PROGRAMME

- 08:00 – 08:30** **TEA**
- 08:30 – 08:55** **REGISTRATION** (GSB&L Entrance Hall)
- 09:00 – 09:15** **OPENING PLENARY** (GSB&L Auditorium)
MC–Professor Neil Koorbanally, Acting Dean of Research, UKZN
Introduction – Mr Steve Camp, Executive Director, UKZN Foundation
Official Welcome
- 09:15 – 09:20** **Research and Innovation**–Dr Nqobile Gumede, Director, *Innovation and Entrepreneurship*, UKZN
- 09:20 – 09:30** **GSB&L Programmes** - Professor Serestina Viriri, Executive Director and Dean, *Graduate School of Business and Leadership (GSB&L)*
- 09:30 – 09:50** **Research and Development Tax Incentives** – Dr Pholoshi Maake, Deputy Director, *Department of Science and Technology (DSTI)*
- 10:00 – 11:00** **Session 1 – ORAL PRESENTATIONS** (GSB&L Auditorium, G41 & F10)

TIMESLOT	BREAKAWAY ONE (GSB&L Auditorium) Chair: Professor Anne Stark Professor Kuven Moodley	BREAKAWAY TWO (G41) Chair: Professor Frasia Oosthuizen	BREAKAWAY THREE (F10) Chair: Professor Sudan Hansraj Professor Mathew K Moodley
10:00 – 10:10	Research, Development and Innovation in waste and biomass valorisation Professor Annegret Stark	Identification and Surveillance of Substandard and Falsified Medicines in South Africa Using the GPHF-Minilab™: A Field-Based Rapid Detection Approach Professor Frasia Oosthuizen	Nanomaterials for the clean-up of water Professor Brenda Moodley
10:10 – 10:20	Circular Economy and Resource Recovery Hub (CERR-Hub) Professor Randhir Rawatlal	IMPACT PHC: Building Africa's First District-Level Learning Health System for PHC Dr Kimera Tamzin Suthiram Professor Mergan Naidoo	Moving the Needle: An Online Mathematics Teaching-Enhancement Pilot for the Greater Durban Area Professor Sudan Hansraj
10:20 – 10:30	Continuous Thermal Dehydration and Fry-Drying of Sludge for High-Energy Value Biomass Production Dr Samuel Getahun	Fusion Protein Platform for the construction of novel TB Antigen Candidates for Diagnostic and Vaccine Development Dr Koobashnee Pillay	Diamond-Like Carbon (DLC) Hard Coatings on Acoustic Drive Unit Diaphragms for Suppression of High-Frequency Breakup Modes Professor Mathew K Moodley
10:30 – 10:40	Development of a Multipurpose Modular Hydrometallurgical Pilot Plant for Critical Metal Recovery from Electronic Waste Professor Kuven Moodley	Enabling Self-Employment for Persons with Disabilities: Validation of the OTeSP Framework Luther Lebogang Monareng	Engineering Molecular Hybrid Therapeutics from Existing Drugs to Address the Global Challenge of Drug-Resistant Tuberculosis Professor Parvesh Singh

**DSTI & UKZN SPARK KZN WORKSHOP
24 JUNE 2026, UKZN GRADUATE SCHOOL OF
BUSINESS AND LEADERSHIP, WESTVILLE CAMPUS**

FULL PROGRAMME



10:40 – 10:50	Performance Evaluation of Pavement's Seal Course Using Nanomaterial and Sasobit® REDUX Eche Samuel Okem Prof Mohamed Mostafa	A Responsive Caregiving and Maternal Mental Health Support Toolkit for Vulnerable Mother -Infant Dyads Dr Gina Rencken	Mycoshield: Development and Validation of a Broad- Spectrum Antifungal Hospital Disinfectant Professor Ché Pillay
10:50 – 11:00	Low-Light Image Enhancement Kwanda Hlatshwayo Professor Hongjun Xu	Tape-Assisted Closure (TAC): A Novel Mechanical Wound Therapy for Accelerated Skin Healing Professor Mahendra Daya	Development and Forensic Validation of a Multiplex Biosensor Platform for Rapid Body Fluid Identification on Forensically Relevant Substrates Dr Meenu Ghai

11:00 – 11:20

Tea

11:25 – 13:00

Session 2 – ORAL PRESENTATIONS (GSB&L Auditorium, G41 & F10)

TIMESLOT	BREAKAWAY ONE (GSB&L Auditorium) Chair: Professor Anne Stark Professor Kuven Moodley	BREAKAWAY TWO (G41) Chair: Professor Frasia Oosthuizen	BREAKAWAY THREE (F10) Chair: Professor Sudan Hansraj Professor Mathew K Moodley
11:25 – 11:35	Development of a Pilot-Scale Continuous Mineral Carbonation Process for CO ₂ Sequestration Using Mine Tailings Professor Kuven Moodley	Solution Processable Thin Film Organic Solar Cell as Alternative Source of Renewable Energy Adepoju Adebayo Tolulope	Bioreactor-Driven Exploration of the Cannabis Sativa Cannabinome for Targeted Antibacterial Activity Dr Shakira Shaik
11:35 – 11:45	Comparison of the Effect of Waste Swine and Cooking Oil Biodiesel on Combustion Efficiency and Regulated Emissions of a Variable Compression Ratio Engine Ojo Olufisayo Emmanuel	Optimisation of animal manure extracts for hydroponic tomato (Solanum lycopersicum L.) and spinach (Spinacia oleracea L.) production Ayanda Luthuli	Direct conversion of carbon dioxide (CO ₂) through transition metal catalysis to dimethyl ether (DME) for hydrogen storage Bafokeng Sekaleli
11:45 – 11:55	Design and Performance Evaluation of a Pre-Treatment Sedimentation Basin for Reducing Siltation Inflow at Water treatment Plants: A Case Study of the Upper Umkhomazi Catchment, KwaZulu-Natal, South Africa Simphiwe KN Biyela	Investigating the Molecular and Immunomodulatory Roles of Vaginal Gardnerella Extracellular Vesicles in Bacterial Vaginosis and Associated Mucosal Inflammation Busisiwe Nomnganga	The application of epinecrotic bacterial communities as toxicological indicators of lethal drugs and their metabolites in decomposing pig carcasses and surrounding soil Bonolo Moeketsi

**DSTI & UKZN SPARK KZN WORKSHOP
24 JUNE 2026, UKZN GRADUATE SCHOOL OF
BUSINESS AND LEADERSHIP, WESTVILLE CAMPUS**

FULL PROGRAMME



11:55 – 12:05	The Application of Quadrupedal Mobile Robots in SA Manufacturing Environments: Manufacturing Task Value Fit, Design Adaptation and Secondary Development, Operational Validation, and Industry Piloting Siyabonga Masiza	Synthesis, Characterization and Biological Evaluation of Novel Chromene and Chromeno[2,3-d] Pyrimidine Derivatives as Antiproliferative Agents Against MCF-7 Breast Cancer Cells and Antibacterial Agents Carren Nyapola	AI- Driven O-RAN Slice Orchestration for 5G-Advanced and 6G Networks Professor Okuthe Paul Kogeda Charles Ssengonzi
12:05 – 12:15	Quantifying the Impact of Land Use/Land Cover and Climate Change on Forest Ecosystem Service Value in the Nkandla Forest Complex, South Africa Herine Pamela Auma	Comparative seasonal analysis of heat shock protein (HSP) expression and thermotolerance in indigenous vs. Broiler chicken breeds. Khethiwe Nosicelo Maphosa	Intersecting crisis: Investigating the Compounded Impact of Climate Change on Food Security, Mental Health, and Foodborne Diseases Among Farming communities in the uMkhanyakude District, KwaZulu- Natal Gugulethu Mdluli
12:15 – 12:25	RFI detection in Interferometric data using Machine Learning tools Lutho Sola	Biological Responses to Land-Use and Climate Changes in KwaZulu-Natal Major Catchments Lwandile Ngozi	BiFeO ₃ -Based Multifunctional Thin Films for Energy and Non-Volatile Memory Storage Devices Michael Hlongwane
12:25 – 12:35	Late Quaternary Climate Change and Human Impact, St. Lucia, KwaZulu-Natal Mpilo Prince Nxumalo	Use of Carrion Insects as Indicators of Paracetamol Poisoning and Overdose in Decomposing Carcasses and the Implications for Postmortem Interval Estimation Mzwandile Hadebe	Phenotypic Characterization and Breeding Objectives of Non-Descript Cattle in KwaZulu-Natal Province, South Africa: Implication for the Design of Community-Based Breeding Programme Nduduzo Patricia Dlodlo
12:35 – 12:45	Impacts of Pluralistic Extension Delivery on Farmers' Production in KwaZulu-Natal, South Africa Ntuthuko Hadebe	Development of Sustainable Biological and Plant-Based Strategies for the Management of Trichoderma Species in Oyster Mushroom (Pleurotus ostreatus) Production Nonkanyiso Malevu	Security and Sustainable Resource Management Ntandokayise Makhathini
12:45 – 12:55		Development of a Microalgae-Bacteria Bioremediation System for the Removal of Antimicrobial Resistance and Priority Pathogens from Municipal Wastewater in KwaZulu-Natal Praise Emmanuel	Elucidating the Mechanisms of Action of the Antimalarial Property of a Polyherbal Extract from Azadirachta indica, Persea americana, and Mangifera indica Leaves Reuben Samson Dangana

**DSTI & UKZN SPARK KZN WORKSHOP
24 JUNE 2026, UKZN GRADUATE SCHOOL OF
BUSINESS AND LEADERSHIP, WESTVILLE CAMPUS**

FULL PROGRAMME



13:00 – 14:00

Networking Lunch (*Comsa Lounge*)

14:00 – 15:00

Session 3 – ORAL PRESENTATIONS (*GSB&L Auditorium, G41 & F10*)

TIMESLOT	BREAKAWAY ONE (GSB&L Auditorium) Chair: Professor Anne Stark Professor Kuven Moodley	BREAKAWAY TWO (G41) Chair: Professor Frasia Oosthuizen	BREAKAWAY THREE (F10) Chair: Professor Sudan Hansraj Professor Mathew K Moodley
14:00 – 14:10	Iterative Algorithms for Solving Fixed Point and Optimization Problems in Hilbert and Banach Spaces Shamsudeen Abiodun Kajola	Crystalline Nanocellulose for New Generation SolCells Shruti Saroj	Enhancing Human Excreta-Derived Co-Compost Using Water Treatment Residuals and Biochar Sinikiwe Precious Khumalo
14:10 – 14:20	Optimising Harvest Maturity Indices and Postharvest Quality Preservation of South African-Grown Blueberries Siphokuhle Mbuyisa	Nanotechnology and Biostimulants: A Sustainable Approach to Abiotic Stress Management and Shelf-Life Extension in Blueberries Siyabonga Dlamini	Development of a Novel SDI-SuperDARN Data Fusion System for Quantifying Mesoscale Auroral Energy Deposition and Thermosphere-Ionosphere Coupling Siyanda Hlathi
14:20 – 14:30	Developing an Operational Framework on the Nutritional Management of Secondary Severe Acute Malnutrition in Children Under 5 Years of Age in KZN Nireshnee Pillay	Environmental stress tolerance breeding for dual-purpose pearl millet (<i>Pennisetum glaucum</i>) using marker-assisted selection and CRISPR-Cas9 technology Valentine Emmanuel Ojochegbe	Tracking Of Moving Cell in Time Lapse Video Sequence (Development of a Generalist Deep Learning Framework for Robust Cell Segmentation and Tracking Across Diverse Microscopy Modalities) Wasiu Adeyinka Raji

15:00 – 16:00

Closing Session (*GSB&L Auditorium*)

Closing Remarks and Summary Professor Neil Koorbanally, Acting Dean of Research, *UKZN*

Vote of Thanks Mr Steve Camp, Executive Director, *UKZN Foundation*