



Partner Presentation Form

Name of the organisation :	Wits University	 UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Address:	1 Jan Smuts Ave, Braamfontein, Johannesburg, 2017, Johannesburg South Africa	
Tel:	011 717 1000	
Web site:	https://www.wits.ac.za/	

Name of the contact person :	Professor Ruksana Osman (Institutional contact) Dr Douglas Andrews (Project contact)	
Function:	Prof Osman Senior Deputy Vice-Chancellor: Academic Dr Andrews Lecturer, School of Education, Division of Educational Leadership Policy and Skills	
Address:	1 Jan Smuts Avenue, Braamfontein 2017, Johannesburg, South Africa	
Tel:	Prof Osman 011 717 1142 Dr Andrews 011 717 3091	
E-mail:	Prof Osman email Ruksana.Osman@wits.ac.za Douglas Andrews email Douglas.andrews@wits.ac.za	

Type of organisation:

SME ☐ School ☐ University ☒ Public Authority ☐
Training ☐ No Profit ☐ NGO ☐

Other (Specify)

Fields of action :

SMEs ☐ Youth ☐ Universities ☒ Public Authorities ☐
Equal opportunities ☐ Schools ☐ Unemployed ☐

Other (Specify)

Higher Education provider

Description of the organisation

Introduction

The University of the Witwatersrand, Johannesburg, commonly known as Wits University or Wits, is a multi-campus public research university located in the northern areas of central Johannesburg, South Africa. Wits is one of the most highly ranked universities on the African continent and boasts many centers of excellence on its property, notably the Wits Origins Centre, which houses a large proportion of all the fossil finds of early humans in the world. Wits University is also one of South Africa's largest teacher education providers and medical staff providers. The law school, the business school, and the mining and engineering divisions are world-class.

Specifics

The University of the Witwatersrand, Johannesburg (Wits), is a 100-year-old public University in South Africa. It is the 2nd highest ranked university nationally, 2nd in Africa (US News Best Global Universities Rankings 2024-2025), 4th highest ranked university nationally, 2nd in Africa (QS World University Rankings 2025), and in the 301-350 range in the world (Times Higher Education World University Rankings 2025).

Wits aspires to be a **leading world-class research-intensive university** and to be a gateway to research engagement and intellectual excellence in Africa. It is committed towards **finding solutions** grounded in the values that we need to cherish as a society – excellence, the commitment to social justice, and the seeking of new knowledge to advance the public good. These aspirations and values are imbued in Our 2033 Strategic Framework (covering the period for this endowment) which positions Wits to be “the ‘leading edge’ as the foremost research-intensive university in the Global South bridging the world’s divides using our location in Johannesburg to act as an interlocutor between the Global South and North, and being driven by our motto, *Scientia et Labore*” (p.1). Our motto can be interpreted as “Through knowledge and Work or Through knowledge and Industry” (<https://www.wits.ac.za/about-wits/history-and-heritage/coat-of-arms/>).

Our integrated research and teaching, inclusive of public engagement and partnerships for which Wits is well positioned, offer unique ways to address the major global problems of the 21st Century, some of which are still unfolding. Currently, Wits has over 50 active projects around Africa; and it is strategically located within the economic and industrial heartland of the African continent. This places Wits in good stead to interact with the public and private sectors, civil society and other social agents to effect meaningful change in society. As a change agent in Africa, Wits is active in addressing the structural, political and socio-economic challenges with which we are confronted as a society. Wits is proud of its four Nobel Laureates (**Aaron Klug** - Nobel Prize in Chemistry; **Nadine Gordimer** - Nobel Prize in Literature, **Nelson Mandela** - Nobel Peace Prize, and **Sydney Brenner** - Nobel Prize in Medicine). To name a few, our notable alumni include Helen Suzman, Ruth First, Thuli Madonsela and Glenda Gray. The Wits Innovation Centre (WIC) unit helped the university secure 13 patents in 2024, particularly in the fields of health sciences and bioengineering technologies. These innovations focused on breakthroughs in work around neural tissue regeneration, solar energy optimisation, and treatments for cancer and ageing, to name a few. In 2024, the first year of the Postgraduate Diploma (Science) in the field of Innovation and Entrepreneurship was

launched.

Wits is a leader in digital business and governance, big data, artificial intelligence, robotics, supercomputing, and quantum computing. Two Wits Alumni were named among TIME magazine's Top 100 Most Influential People in Artificial Intelligence for 2023. Wits is also home to: WitsQ, the Wits Quantum Initiative, an African first, which seeks to advance quantum technologies through research, innovation, business, education, outreach and ethics; the Wits DigiMine, a 'mock mine' that tests the latest digital technologies underground, and the new Wits AI Institute which was unveiled in November 2024.

In 2023, Wits employed 1 276 permanently appointed academic staff members (25% from outside of SA). It hosted over 40 research entities, and had just more than 42 000 students (7% from outside South Africa) of which almost 40% were postgraduate students. In 2023, Wits authors published close to 4000 publications indexed by the Web of Science (ISI) index.

Experience of the organization in previous European projects

2025 - 2027

Erasmus+ programme 2021-2027: Capacity Building in Higher Education Action (supports partnerships for cooperation) (ERASMUS-EDU-2024-CBHE)

Transforming STEM teacher education in South Africa through Self-Directed Open Educational Practices (Ted-SOEP)

Noordwes-Universiteit, South Africa is the coordinator. There are 8 participants.

2025 - 2028

Erasmus+ programme 2021-2027: Capacity Building in Higher Education Action (supports partnerships for cooperation) (ERASMUS-EDU-2024-CBHE)

Capacity Building in Implementation Science education for Non-Communicable Disease prevention and management in Africa (IS4NCDs)

Universitair Medisch Centrum Utrecht, Netherlands is the coordinator. There are 7 participants.

2024 - 2027

Horizon Europe Programme: Research & Innovation Action (HORIZON-EUSPA-2023-SPACE)

Geospatial Artificial Intelligence Analysis for Tailings Storage Facilities (GAIA-TSF)

Cluster Para la Minería Sostenible Y Servicios Asociados de la Península Ibérica - Iberian Sustainable Mining Cluster, Spain is the coordinator. There are 7 participants.

2024 - 2027

Erasmus+ programme 2021-2027: Capacity Building in Higher Education Action (supports partnerships for cooperation) (ERASMUS-EDU-2024-CBHE)

Sub-Saharan Africa Teacher Leadership for ESD (SSATL-ESD)

Leuphana Universität Luneburg, Germany is the coordinator. There are 15 participants.

2024 - 2031

Erasmus+ programme 2021-2027: Erasmus Mundus Joint Masters (ERASMUS-EDU-2024-PEX-EMJM-MOB)

Economic POLicies for the Global bifurcation - Joint Master (EPOG-JM)

Université de Technologie de Compiègne, France is the coordinator. There are 11 participants.

2024 – 2029

Horizon Europe Programme: European Research Council Grant (ERC-2023-ADG)

Pliocene Hominin Dispersal to southern Africa: Choice or Chance? (PLIODIS)

Senckenberg Gesellschaft Für Naturforschung, Germany is the coordinator. There are 2 participants. The overall budget is € 2 499 248.

2024 - 2028

Horizon Europe Programme: Marie Skłodowska-Curie Actions Doctoral Networks (HORIZON-MSCA-2022-DN-01)

Dryland agriculture and Land use; past, present and future resilience [AGRI-DRY] (AGRI-DRY)

Universidad Pompeu Fabra, Spain is the coordinator. There are 5 participants.

2024 - 2028

Horizon Europe Programme: Coordination and Support Action (HORIZON-CL2-2023-DEMOCRACY-01)

EU-CIEMBLY: Creating an Inclusive European Citizens' Assembly (EU-CIEMBLY)

Universidade de Coimbra, Portugal is the coordinator. There are 10 participants. The overall budget is € 2 106 591, 25.

2024 - 2028

Neighbourhood, Development and International Cooperation Instrument: Mobility for Africa (NDICI-2023-MOBAF)

Green, REsilient and ENTREpreneurial Science, Technology, Engineering and Mathematics for Africa (GREEN-STEM)

University of Nairobi, Kenya is the coordinator. There are 5 participants.

2023 - 2026

Erasmus+ programme 2021-2027: Jean Monnet Actions (supports partnerships for cooperation) (ERASMUS-JMO-2023-NETWORKS)

PolyCIVIS: Confronting the Polycrisis in Europe and Africa (PolyCIVIS)

Université Libre de Bruxelles, Belgium is the coordinator. There are 19 participants.

2023 - 2026

Erasmus+ programme 2021-2027: Capacity Building in Higher Education (supports partnerships for cooperation) (ERASMUS-EDU-2022-CBHE)

Smart Manufacturing Engineering Education for Knowledge Economy (SME2KE)

Botswana International University of Science & Technology, Botswana is the coordinator. There are 9 participants.

2023 - 2027

Horizon Europe Programme: Research & Innovation Action (HORIZON-CL2-2022-DEMOCRACY-01)

The EU Navigating Multilateral Cooperation (NAVIGATOR)

Norsk Utenrikspolitisk Institutt, Norway is the coordinator. There are 11 participants. The overall budget is € 2 992 512, 50.

2023 - 2026

Erasmus+ programme 2021-2027: Capacity Building in Higher Education (supports partnerships for cooperation) (ERASMUS-EDU-2022-CBHE)

Focus on Africa Space science and Technology for Future development (FAST4Future)

Botswana International University of Science & Technology, Botswana is the coordinator. There are 13 participants.

2023 - 2028

Horizon Europe Programme: Research & Innovation Action (HORIZON-HLTH-2022-DISEASE-07)

A Youth-centred Preventive Action Approach towards co-created implementation of socially and Physically activating Environmental interventions (YoPAAPE)

Stichting Amsterdam UMC, Netherlands is the coordinator. There are 10 participants. The overall budget is € 3 281 100.

2022 - 2026

Horizon Europe Programme: Innovation Actions (HORIZON-CL4-2022-RESILIENCE-01)

European Mining in the Green and Digital Era (MASTERMINE)

Instituto Tecnológico de Aragon, Spain is the coordinator. There are 23 participants. The overall budget is € 13 840 564, 91.

2022 - 2025

Horizon Europe Programme: Coordination and Support Action (HORIZON-INFRA-2021-DEV-01)

Knowledge and climate services from an African observation and Data research Infrastructure (KADI)

Integrated Carbon Observation System European Research Infrastructure consortium, Finland is the coordinator. There are 13 participants. The overall budget is € 1 500 000.

2022 - 2025

Horizon Europe Programme: Coordination and Support Action (HORIZON-WIDERA-2021-ERA-01)

Pro-active Pandemic Crisis Ethics and Integrity Framework (PREPARED)

Uclan Cyprus Limited, Cyprus is the coordinator. There are 14 participants. The overall budget is € 4 201 758, 75.

2022 - 2028

Erasmus+ programme 2021-2027: Erasmus Mundus Joint Masters (ERASMUS-EDU-2021-PEX-EMJM-MOB)

European Master in Migration and Intercultural Relations (EMMIR)

Carl von Ossietzky Universitaet Oldenburg, Germany is the coordinator. There are 9 participants.

2021 - 2025

Erasmus + Programme: (EAC-A02-2019-CBHE)

Dirisana+ (Dirisana+)

University of Pretoria, South Africa is the coordinator. There are 8 participants. The overall budget is € 1 000 000.

2021 - 2026

Pan-African Programme: (EACEA-07-2020)

Pan-African Planetary and Space Science Network (Pan-African Planetary and Space Science Network)

Botswana International University of Science & Technology, Botswana is the coordinator. There are 6 participants. The overall budget is € 1 395 700.

2021 - 2026

Pan-African Programme: (EACEA-07-2020)

Electrochemical Science and Innovative Materials for Sustainable Africa Development (Electrochemical Science and Innovative Materials for Sustainable Africa Development)

Addis Ababa University, Ethiopia is the coordinator. There are 6 participants. The overall budget is € 1 393 000.

2020 - 2025

Horizon 2020 programme: Research & Innovation Action (H2020-LC-CLA-2019-2)

Full-value chain Optimised Climate User-centric Services for Southern Africa: FOCUS-Africa (FOCUS-Africa)

World Meteorological Organization, Switzerland is the coordinator. There are 15 participants. The overall budget is € 6 973 017, 50.

2020 - 2026

Horizon 2020 programme: European Research Council Starting Grants (ERC-2019-STG)

Interrupting the intergenerational transmission of violence: a mixed-methods longitudinal study in South Africa (INTERRUPT_VIOLENCE)

The University of Edinburgh, United Kingdom is the coordinator. There are 3 participants. The overall budget is € 1 499 835.

2020 - 2024

Horizon 2020 programme: Research & Innovation Action (H2020-SC6-MIGRATION-2019)

The Right to International Protection: A Pendulum Between Globalization and Nativization? (PROTECT)

Universitetet i Bergen, Norway is the coordinator. There are 12 participants. The overall budget is € 3 375 517, 50.

2019 - 2024

Horizon 2020 programme: Research & Innovation Action (H2020-SC5-2018-2)

Towards sustainable mineral and metal industry: ZERO Bauxite Residue and ZERO CO2 from co-production of Alumina, Silica and precipitated Calcium carbonate by the Aranda-Mastin technology (AlSiCal)

Institutt for Energiteknikk, Norway is the coordinator. There are 17 participants. The overall budget is € 5 888 235.

2019 - 2026

Horizon 2020 programme: European Research Council Advanced Grant (ERC-2018-ADG)

Making Africa Urban: The transcalar politics of large-scale urban development (MAU)

University College London, United Kingdom is the coordinator. There are 4 participants. The overall budget is € 2 495 276, 25.

2019 - 2026

Erasmus + Programme: (EACEA-03-2018)

Economic policies for the global transition (Economic policies for the global transition)

Universite de Technologie de Compiegne, France is the coordinator. There are 8 participants. The overall budget is € 4 352 000.

2019 - 2025

Horizon 2020 programme: European Research Council Consolidator Grant (ERC-2018-COG)

Pathways to humanity: Adaptive niche diversity at the origins of the human lineage (NewHuman)

Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften EV, Germany is the coordinator. There are 5 participants. The overall budget is € 1 998 643, 75.

2019 - 2024

Horizon 2020 programme: Research & Innovation Action (H2020-SC5-2018-2)

Development of an innovative sustainable strategy for selective biorecover of critical raw materials from Primary and Secondary sources (BIORECOVER)

Fundacion Centro Tecnologico de Investigacion Multisectorial, Spain is the coordinator. There are 15 participants. The overall budget is € 6 337 277, 50.

2017 - 2021

Horizon 2020 programme: Coordination and Support Action (H2020-INFRA-SUPP-2016-1)

Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations (SEACRIFOG)

Johann Heinrich Von Thuenen-Institut, Bundesforschungsinstitut Fuer Laendliche Raume, Wald Und Fischerei, Germany is the coordinator. There are 16 participants. The overall budget is € 1 999 890.

2017 - 2021

Horizon 2020 programme: Coordination and Support Action (H2020-INFRADEV-2016-1)

Readiness of ICOS for Necessities of integrated Global Observations (RINGO)

Integrated Carbon Observation System European Research Infrastructure consortium, Finland is the coordinator. There are 30 participants. The overall budget is € 4 719 680.

2016 - 2020

Erasmus + Programme: (EAC-A04-2015)

Learning and Teaching Tools Fuelling University Relations with the Economy in Mozambique and South Africa (Learning and Teaching Tools Fuelling University Relations with the Economy in Mozambique and South Africa)

Universitat Fur Weiterbildung Krems, Austria is the coordinator. There are 15 participants. The overall budget is € 989 766.

2016 - 2023

Erasmus + Programme: (EAC-A04-2015)

European Master in Migration and Intercultural Relations (European Master in Migration and Intercultural Relations)

Carl Von Ossietzky Universitaet Oldenburg, Germany is the coordinator. There are 7 participants. The overall budget is € 2 900 000.

2016 - 2020

Horizon 2020 programme: Research & Innovation Action (H2020-INT-SOCIETY-2015)

Reconsidering European Contributions to Global Justice (GLOBUS)

Universitetet I Oslo, Norway is the coordinator. There are 8 participants. The overall budget is € 2 498 996, 25.

2015 - 2018

Horizon 2020 programme: Coordination and Support Action (H2020-SC5-2015-one-stage)

Strategic Dialogue on Sustainable Raw Materials for Europe (STRADE)

Oeko-Institut E.V. - Institut Fuer Angewandte Oekologie, Germany is the coordinator. There are 8 participants. The overall budget is € 1 977 508, 75.

2015 - 2019

Horizon 2020 programme: Coordination and Support Action (H2020-GARRI-2014-1)

Creating and enhancing TRUSTworthy, responsible and equitable partnerships in international research (TRUST)

University of Central Lancashire, United Kingdom is the coordinator. There are 13 participants. The overall budget is € 2 651 258, 75.

2011 - 2016

Framework Programme 7: Civil Protection (FP7-SSH-2010-1)

Financialisation, economy, society and sustainable development. (FESSUD)

University of Leeds, United Kingdom is the coordinator. There are 15 participants. The overall budget is € 9 977 116, 68.

2011 - 2014

Framework Programme 7: Coordination and Support Action (FP7-HEALTH-2011-single-stage)

Multilateral Association for Studying health inequalities and enhancing north-south and south-south COoperation (MASCOT)

Council on Health Research for Development Association, Switzerland is the coordinator. There are 11 participants. The overall budget is € 2 289 335, 20.

2011 - 2015

Framework Programme 7: Coordination and Support Action (FP7-HEALTH-2011-single-stage)

Building Sustainable Research capacity for Health and its Social Determinants in Low- and Middle-Income Countries (SDH-Net)

Deutsche Gesellschaft Fur Internationale Zusammenarbeit (Giz) Gmbh, Germany is the coordinator. There are 11 participants. The overall budget is € 2 354 525, 20.

2011 - 2016

Framework Programme 7: Civil Protection (FP7-HEALTH-2011-single-stage)
Diagonal Interventions to Fast-Forward Enhanced Reproductive Health (DIFFER)
Universiteit Gent, Belgium is the coordinator. There are 6 participants. The overall budget is € 3732146, 21.

2011 - 2014

Framework Programme 7: Coordination and Support Action (FP7-ENV-2011)
Uptake of Climate related Research Results through Knowledge Platforms with African Collaboration Partners (AfriCAN Climate)
Wirtschaft und Infrastruktur GmbH & Co Planungs KG, Germany is the coordinator. There are 10 participants. The overall budget is € 1 270 903.

2011 - 2015

Framework Programme 7: Coordination and Support Action (FP7-AFRICA-2010)
Consortium for Health Policy and Systems Analysis in Africa (CHEPSAA)
London School of Hygiene and Tropical Medicine Royal Charter, United Kingdom is the coordinator. There are 11 participants. The overall budget is € 2 237 212, 79.

2011 - 2017

Framework Programme 7: Civil Protection (FP7-HEALTH-2010-single-stage)
Universal coverage in Tanzania and South Africa: Monitoring and evaluating progress (UNITAS)
London School of Hygiene and Tropical Medicine Royal Charter, United Kingdom is the coordinator. There are 7 participants. The overall budget is € 3 935 289, 12.

2010 - 2014

Framework Programme 7: Civil Protection (FP7-AFRICA-2010)
Evaluation and impact of screening and treatment approaches for the prevention of cervical neoplasia in HIV-positive women in Burkina Faso and South Africa: HPV in Africa Research Partnership (HARP)
London School of Hygiene and Tropical Medicine Royal Charter, United Kingdom is the coordinator. There are 4 participants. The overall budget is € 3 919 769, 59.

2009 - 2011

Framework Programme 7: Banking Stakeholder Group (FP7-SME-2008-1)
Development environment and demonstrators for resonant power conversion facilitating high voltage test systems using very low frequency and DC-sources (RPC-HVTS-DCS)
Universitaet Paderborn, Germany is the coordinator. There are 9 participants. The overall budget is € 1 463 328, 32.

2009 - 2012

Framework Programme 7: Coordination and Support Action (FP7-AAT-2008-RTD-1)
Promoting European - South African Research Cooperation in Aeronautics and Air Transport (AeroAfrica-EU)
University of the Witwatersrand Johannesburg, South Africa is the coordinator. There are 6 participants. The overall budget is € 419 754, 32

Experience and Expertise of the organization in the project's subject area

*Subject area : Transforming STEM teacher education in South Africa through Self-Directed Open Educational Practices (STOEP) by investigating capacity building for STEM lecturers and students in **teacher education programs** at undergraduate and postgraduate levels.*

Experience in this field of science and technology-

MEMBER OF AFRETEC NETWORK

Since 2022, the University of the Witwatersrand is the sole South African university in the esteemed African Engineering and Technology Network (Afretec). Afretec, a partnership between leading technology-focused universities across Africa and the Mastercard Foundation, aims to drive Inclusive Digital Transformation of Africa through collaborative initiatives that leverage the collective strengths of the Afretec network. The partnership is focused on three pillars: teaching and learning, knowledge creation, and entrepreneurship, with the goal of creating opportunities and fostering technology leaders who can spearhead inclusive digital transformation and the creation of dignified jobs. Current members of Afretec include Carnegie Mellon University Africa, The American University in Cairo, University of Lagos, University of Nairobi, University of Rwanda, Al Akhawayn University, Université Cheikh Anta Diop and the University of the Witwatersrand (Wits). Based on approved proposals and budgets, funding is awarded annually to each partner for activities in each of the pillars and for collaborative research. Over a period of 2 years, Wits has received a total of R29 848 400 (\$ 1,658, 244) in funds for research projects and various teaching and learning, and entrepreneurship activities. Those related to teacher education are described below.

Wits Afretec Knowledge Creation (Research) in Teacher Education

In 2023, the Wits School of Education Team, in collaboration with the Institute of Education at University of Rwanda, secured a grant for their project, titled "*Improving Digital Education and Learning Innovation in the Rwandan and South African Teacher Education Systems: Towards Bridging a Digital Knowledge Divide in Africa.*" The project aims to promote digitally innovative teaching approaches and foster collaboration between the education institutions of South Africa and Rwanda, with a specific focus on under-resourced rural schools. This accomplishment highlights the University of the Witwatersrand's commitment to advancing education and technology in South Africa and beyond.

Wits Afretec Teaching and Learning Activities in Teacher Education

- **Wits School Of Education Digital Hub in 2023** aimed to increase digital capacity among a cohort of lecturers who would transfer the skills across a wider spectrum of in-service teachers and directly capacitate selected in-service teachers based in marginalized rural schools. The project collected data informing sustainable digital solutions through the establishment of an education digital hub to prepare,

inclusively, the new generation of digitally savvy teachers along the aspirations of an e-education agenda (National Development Plan: 2030) and equitable educational provision. Focused capacitation workshops and a differentiated short course was offered to 30 lecturers at the Wits School of Education.

- **Wits School of Education Digital Mastery and Academic Advancement faculty enrichment programme:** Through Advanced Digital Pedagogy Workshops (April-June 2024) and an intensive four-day retreat (3-6 September 2024), this programme focused on Advanced bibliometric analysis techniques, Digital research methodologies, Publication strategy development and hands-on training with digital tools like VOSviewer.
- **AI-Enabled Innovations in Foundation Phase Education:** This project focuses on 2 research areas : *Towards a Critical Discourse on Coding and Robotics in Education Myths and Realities* and *Reflections on 10 years of Research into ICT in Education in South Africa* and emphasises equity in educational technology, addressing the barriers marginalised students face in accessing ICT and coding and robotic resources. This focus contributes to broader discussions on inclusion in education, providing a voice for underserved groups in the analyses and recommendations.
- **AI-Enhanced Peer Review and Supervision in Higher Education.** In an attempt to advance Peer Review of Teaching and Supervision, the Centre for Learning, Teaching, and Development (CLTD) implemented a 3-week blended professional course to promote reflective, collaborative teaching practices and improve postgraduate supervision. The course was implemented in 2025 using a strategy that includes leveraging AI and data analytics to refine feedback processes and create more impactful mentoring relationships.
- Sub-Saharan Africa (SSA) is experiencing a significant 'teacher gap': a shortfall in quantity of teachers, and quality of teachers' competences, compounding a general crisis in teaching and learning. The international collaborative project currently entitled '**Sub-Saharan Africa Teacher Leadership for Education for Sustainable Development (SSATL-ESD)**' will be coordinated out of Leuphana University, Germany in partnership with Universities in South Africa, Zambia, Namibia, Malawi, Kenya, Crete and Greece. The University of Witwatersrand is a partner in this initiative.
- **Workshop on Disability and Technology in Higher Education** (3-4 September 2024). The Afretec Inclusion and Impact team in collaboration with Wits Disability Rights Unit conducted this workshop, attended by 66 delegates from all Afretec universities as well as South African participants. Themed **Enabling Access and Success**, the workshop brought together innovators, educators, and students to explore and brainstorm assistive technology, artificial intelligence and tech innovation, Universal Design for Learning (UDL), disability policy, and research in the disability sector. The workshop created an opportunity to foster partnerships across Africa, and to share, learn, and discover ways to make our institutions more equal, accessible and welcoming for all students and staff with disabilities. Partnering with Afretec was instrumental in enabling an impact-driven workshop. The workshop laid the groundwork for the formation of an African Higher Education Disability group, uniting institutions across the continent committed to advancing disability inclusion. Wits University's Disability Rights Unit (DRU) will spearhead

this collaborative effort, driving the push for more inclusive education systems in Africa.

- **Afretec Inclusion Champions Award 2025** received by Associate Professor Eunice Nyamupangedengu, Director of the Marang Centre in the School of Education that advances research and knowledge creation in Mathematics, Science and Technology Education. Afretec Inclusion Champions are prestigious awards that recognise individuals and teams who have contributed outstandingly to promoting inclusion and diversity in STEM education, research, entrepreneurship, and innovation.
- Wits representatives attended a faculty enrichment workshop from 27 – 28 January 2025 at the American University in Cairo (AUC), Egypt. Topics included teaching and learning within large-class environments; STEM education mindsets and strategies for transformation; curriculum design workshops, intentional design to promote inclusive and student-based learning experiences; trauma-informed pedagogy. Overall, the two-day program served as a platform for challenging taken-for-granted assumptions involved in reviewing, enhancing, and modernising university curricula to meet evolving educational demands.

Wits Afretec activities in Entrepreneurship

- ***Train-the-trainer workshop for entrepreneurship instructors/faculty*** In Collaboration with Wits Innovation Centre a 3-day **workshop** was organized at Wits University during Oct 2-4, 2024. This workshop was an exchange of ideas with representatives from all of the Afretec institutions wrt the content, teaching methodologies and experience of the undergraduate and graduate level (both online and in-person) courses related to innovation and entrepreneurship for science and engineering students and associated campus events in support of entrepreneurship. Best practices in inspiring innovative and entrepreneurial skills in students and the way the courses are designed to connect to the local ecosystems were also exchanged. University policies supporting entrepreneurial activities in each of the institution were also discussed.

Advancing Peer Review and Supervision Practices through AI and Data

- **Student Entrepreneurship Education Development (SEED)** is a student focused program meant to stimulate entrepreneurial mindset through a variety of customised workshops, experiential learning activities(hackathons) and practical projects co-created with external partners. During the 2023 and 2024 academic years SEED received AFRETEC base funding to conduct a student workshop to cultivate tech entrepreneurship.ng
- In 2025, a collaborative research team was established between the Wits School of Education and the Faculty of Education at the University of Rwanda. This project investigates inclusive digital growth and professional development through mentorship for early-career academics. It is supported by the UNESCO Chair for Teacher Education in Diversity and Development at Wits. The project aims to utilize digitally supported mentorship initiatives to build technology capacity in higher education degree programs by collaborating with early-career academics to enhance the teaching of postgraduate courses in educational leadership. The goal of this digitally focused project is to provide a selected group of early-career

academics with the knowledge and skills to: (1) use technology to navigate the complexities of the schools they lead; (2) improve knowledge of pedagogical responsiveness to different learning needs through the use of technology to support teacher professional development; and (3) digitize academic and professional development activities using adaptive technologies.

STEM Research and Expertise at the Wits School of Education: Professor Eunice Nyamupangedengu

The Wits School of Education and the UNESCO Chair in Teacher Education for Diversity and Development have a strong and well-established track record in research and project management within the field of STEM education. The school boasts a dynamic and experienced team committed to advancing mathematics, science, and technology teaching and learning across educational levels. At the heart of this work is the Marang Centre for Mathematics and Science Education, led by Professor Eunice Nyamupangedengu, a seasoned academic with extensive experience in spearheading STEM projects. The Centre draws together academics from the Mathematics, Science, and Technology Education divisions, creating a vibrant and collaborative research environment. Among WSoE Marang's flagship initiatives are Wits Maths Connect Primary (WMCP): A significant research and development initiative aimed at strengthening primary mathematics education. The project is supported by leading partners including the FirstRand Foundation, Anglo American, Rand Merchant Bank, and the Department of Science and Technology, and is administered through the National Research Foundation (NRF). Wits Maths Connect Secondary (WMCS): This research-informed professional development project focuses on enhancing mathematics teaching and learning in secondary schools. It explores both the processes and challenges of improving educational outcomes through targeted teacher development. More details are available at: Wits Maths Connect Secondary. Wits is also a partner in the **Sub Saharan Africa Teacher Leadership for Education for Sustainable Development (SSATL-ESD)** project which is sponsored by Erasmus plus. In addition to these large-scale projects, Marang hosts several smaller, innovative initiatives: Building Teaching Capacity and transforming practice in Mathematics and Science Teacher Education through authentic conversations and self-study inquiry: A collaborative project where Marang members engage in reflective dialogue about their STEM teaching practices, fostering a culture of continuous pedagogical growth. Investigating ICT integration in teaching and learning by STEM teachers and lecturers.

Patsime: Breaking Barriers and Building Futures – Empowering Young Women in STEM: Part of the AFRETEC Initiative, this project focuses on empowering young women in STEM and advancing digital transformation and inclusivity on the African continent. It aligns with the African Union's Digital Transformation Strategy and supports the UN Sustainable Development Goals.

STEM project members are also active contributors to the UNESCO Chair in Teacher Education for Diversity and Development. Under the leadership of Professor Ruksana Osman, along with Dr. Douglas Andrews and Prof. Nyamupangedengu, members are advancing research in: Comparative and international perspectives in teacher education, Teaching and learning for diverse learners in varied educational contexts and Transformation, innovation, digital technologies, and decolonial futures in teacher education: <https://www.wits.ac.za/education/research-centres/unesco-chair-in-teacher-education-for-diversity--development/>

- Peer Review and Supervision Practices through AI and Data Analytics course, Analytics course,

Contributions that can be provided to the project

As one of the partner universities involved in the TED – SOEP project, our participation will align with the project's objectives. Our research team will administer the project's research instruments and develop the capacity-building materials as outlined by the project administrators. We will receive all necessary training in Florence and through other available resources to ensure our contributions are on par with those of our partners. This will enable us to provide rigorous and cutting-edge research contributions.

Reasons of involvement in the project

Wits University stands as a beacon of research excellence, with a resolute ambition to lead groundbreaking research endeavors on the African continent. This aspiration is complemented by a steadfast commitment to delivering high-quality teaching and learning experiences within its vibrant campus community. At the heart of this project lies the goal of Capacity Building for both lecturers and students in the dynamic fields of STEM (Science, Technology, Engineering, and Mathematics) within the Wits School of Education. This initiative not only aligns with our foundational objectives of advancing research but also serves to enhance our educational offerings, ensuring that they are both innovative and impactful.

Contact Person's Experience and Expertise

Institutional contact

Professor Ruksana Osman is the Senior Deputy Vice-Chancellor: Academic at the University of the Witwatersrand. In this position she is responsible for the broad coordination of the academic project across all divisions of the University. The five faculty deans report to her, she deputises for the vice chancellor, and she oversees several strategic projects mentioned below.

Prior to this appointment, she served as the Deputy Vice-Chancellor for Advancement, Human Resources and Transformation, as the Dean of the Faculty of Humanities, and as the Head of the School of Education. Her experience in higher education, and her 40-year association with Wits University therefore spans the full range of roles at all levels of institutional management, governance, and leadership. These have included internally- and externally facing foci on enabling staff capacitation, directing the academic project, intellectual leadership, fundraising, contributing to policy development and implementation, and being centrally involved in institutional strategy development.

A Professor of Education, Prof. Osman has extensive teaching and research experience in the field of teacher education and higher education. She has an established reputation for impactful scholarly work in the broad fields of higher education policy, pedagogy and students' lived experiences of equity and access to higher education. She is known for the connections she has made between research centred and research led approaches to learning and teaching and the transformative practices of learning contexts like schools and universities.

Prof. Osman holds the UNESCO Chair in Teacher Education for Diversity and Development and has established a global network to support the research and development work of the Chair. She is widely published in the academic and popular press, and is the author or co-author of multiple papers, journal articles and books. She is the co-editor of *Research-led teacher education: Case studies of possibilities* (2012); *Large Class Pedagogy: Interdisciplinary perspectives for quality higher education* (2013); *Service Learning in South Africa* (2013); *Transforming Teaching and Learning in Higher Education: Towards a Socially Just Pedagogy in a global context* (2017); *Teacher Education for Diversity: Conversations from the Global South* (2018) and *pedagogical responsiveness in complex contexts* (2022).

Outside of South Africa, Professor Osman has been at the forefront of building several transnational partnerships particularly with UK, European and African universities. She has spearheaded Wits' partnership in several strategic academic initiatives including the Diversifying the Academy programmes, the Wits Edinburg Sustainable African Futures (WESAF) doctoral program, the AFRETEC (African Engineering and Technology) network that aims to drive digital transformation on the African continent, The Future Materials Project which involves collaborating with a number of global universities and a new generation of scholars working on future materials and the way such materials can advance society more inclusively.

An elected member of the Academy of Sciences of South Africa, Professor Osman is recognised for the quality and relevance of her work in higher education as a teacher and

researcher in pursuit of socially-just education.

Project contact

Dr. Douglas Andrews is a lecturer in the Wits School of Education's Division of Educational Leadership, Policy, and Skills. He primarily teaches at the postgraduate level, specializing in leadership and inclusive education. Dr. Andrews is a qualified Biology and Geography teacher and has many years of experience working in the field of STEM at the school level. He leads multiple funded research projects that investigate (1) the use of digital technologies to develop school principals enrolled in higher education programs, (2) the MEL project, which examines the use of mentorship to enhance the skills of in-service school leaders enrolled in a Master's degree in Leadership, and (3) a project exploring the leadership strategies necessary for school leaders to navigate the conflicting agendas of inclusion and excellence, aiming to develop and sustain inclusive schools. Dr. Andrews has extensive experience in supervising postgraduate research.