



UNIVERSITY OF NAIROBI

AFRETEC NETWORK



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AFRETEC NEWSLETTER



THEME

LEADING DIGITAL
TRANSFORMATION
IN AFRICA

TOP STORY

UON HOSTS
AFRETEC
CONFERENCE 2023



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2023



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UON HOSTS AFRETEC CONFERENCE 2023



Afretec Members & Partners pose for a photo during the 2nd Annual Afretec Conference

The University of Nairobi was honored to host the 2nd Annual Afretec Conference from the 18th to 20th of September 2023, in collaboration with Carnegie Mellon University

The conference brought together members of the Afretec network from across the partner Universities including Carnegie Mellon University, The University of Rwanda, The University of Witwatersrand, The University of Lagos, The American University in Cairo and The University of Nairobi.

The conference featured high – level panel discussions intended to encourage deep collaboration between African Universities in engineering and technology, through pooling of knowledge, expertise and resources in order to tackle complex challenges and drive technological innovation.

The 2nd Annual Afretec conference kicked off on high note with a recap of the Afretec Network vision led by Prof. Tim Brown, Afretec Network Coordinator, Carnegie Mellon University. The recap was followed by a network coordinators panel discussion where panelists explored the impact of the Afretec network in their universities.



“ As the University of Nairobi, we are proud to be members of the Afretec Network which lays a strong emphasis on Africa-led solutions. ”

- Vice Chancellor University of Nairobi,
Prof. Stephen Kiama.



“ We would then in the engineering training, build engineering around the local environment so that when the students graduate, their engineering addresses the local problems. ”

- Prof. Francis Mulaa, Afretec Network Coordinator, UoN during a media interview at the 2nd Annual Afretec Conference.



Mr. Brian Ouma and Prof. Tim Brown share a light moment during the Afretec Conference



Dr. Conrad Tucker, Prof. Oboh Bolanle, Prof. Ruksana Osman, Prof. Stephen Kiama, Ms. Pauline Gangla Mastercard Foundation and Prof. Kayihura Muganga, pose for a photo during the Afretec Conference

Day two entailed an Industry-Academia Linkage panel discussion followed by pillar breakout meetings which tackled Knowledge Creation, Entrepreneurship, teaching and learning as well as the bridge program . The day ended with an All Things Afretec World Café.

Being at the forefront of digital transformation and inclusivity in Africa, the University of Nairobi takes immense pride in having hosted this significant event spearheading conversations of growth and development of the engineering and technology ecosystem in Africa.

Also present at the event was our main partner Mastercard Foundation, represented by Pauline Gangla who echoed the fourth pillar of the Afretec Network stressing that to be inclusive and to scale impact across the African continent, Africans needed to join forces.

“Afretec is about people and execution. We have a vision, we have a strategy and now it’s moving forward with the plan of knowledge creation, transforming the education and entrepreneurship landscape”.

Remarked
Dr. Conrad Tucker, Interim Director,
CMU Africa in a media interview.

UON WINS INTRA-AFRICA MOBILITY FUND

The University of Nairobi in partnership with some Afretec members won a 1.9 million Euro Intra- Africa mobility grant aimed at supporting 92 mobilities across Africa

The University of Nairobi will be coordinating the Green Stem project, a cross-regional mobility corporation funded by the Intra-Africa Mobility Scheme (MOBAF), led by the European Education and Culture Executive Agency (EACEA) under the European Commission.

The main aim of the Green Stem Project is to contribute to a green, resilient and sustainable development of Africa and its countries by implementing intra-Africa mobility opportunities in Science, Technology, Engineering and Mathematics. This is an effort to share good practices and to build capacities in Higher Education, Research and Innovation (HERI) in Africa.

It is significant to note that all the African partners of Green – Stem are members of the AFRETEC Network, which emphasizes the impact of the network through its objective of encouraging and supporting deep collaboration between African universities in engineering and technology, in the spirit of Pan-Africanism.

Partnering Universities



UNIVERSITY OF NAIROBI



University of Lagos



University of the Witwatersrand, Johannesburg



University of Rwanda



Key thematic fields



Computer Science & Mathematics



Earth, Climate & Environmental Sciences



Chemistry



Engineering



Business



Economics & Law

The University of Nairobi coordinating the Green – Stem Project is a big win that strategically complements and strengthens its STEM related academic activities, programs as well as partnerships under the over-arching mission of providing education and training of excellence to its students and staff.

By offering inclusive and high-level mobility opportunities to African students and staff, GREEN-STEM will contribute to improving the education and employability of the African youth and equip them with the relevant knowledge and competencies to master their futures and address the key societal and environmental issues in the continent.

Furthermore, as a project heavily focused on science, engineering and technology with a mission of intra – Africa

Mobility of students and staff across institutions of higher education, Green – Stem will complement Afretec’s pillars of Knowledge Creation, Teaching and Learning, Innovation and Entrepreneurship as well as Industry linkages.

Green - Stem is also keen on inclusion of women who are largely under-represented in STEM programs and fields in the continent. The project is offering funding opportunities to women to further their studies by ensuring a minimum floor of 40% of women in student mobility in the case where there are no women candidates in credit – seeking mobility. All other mobilities will be open to both men and women resulting to an overall women representation of more than 50 %.



1.9 M€

GRANT AMOUNT IN EUROS



68

STUDENT
SCHOLARSHIPS



24

STAFF
SCHOLARSHIPS



MORE THAN

50%

FEMALE
REPRESENTATION

UNLOCKING OPPORTUNITIES THROUGH GRANT WRITING & RESEARCH



Faculty grant proposal writing pre - workshop 2023

In the quest for knowledge, grants are a critical lifeline for researchers. Grants provide researchers with necessary resources to cover project expenses, allowing them to give their full attention to the work at hand without having to worry about finances. With this burden off their shoulders, researchers are able to pursue their interests, advance knowledge and bring about meaningful change.

The knowledge creation pillar successfully developed and launched the Faculty Enrichment Document which is a blueprint providing guidance, tips, and examples to improve faculty proposal writing abilities. The document also strengthens the institution's research culture by

promoting effective proposal development and boosting faculty members' awareness of funding opportunities while also enhancing the university's reputation in the academic community.

In addition to this, the pillar also held a week - long pre-workshop whose main purpose was to demystify the grant proposal complexities and share strategies and tools that have proved valuable over time. This was closely followed by the main faculty enrichment workshop that equipped faculty members with proposal writing skills. After the workshop, the pillar organized a grant proposal writing retreat where the participants tasked with writing proposals to open calls with the help of their trainers.



Knowledge Creation Pillar Head, Prof. Thomas Ochuku co-leading a session during the grant writing pre-workshop held at the University of Nairobi

Overall, the initiative aimed at building capacity, fostering professional development, improving grant success rates, and contributing to a supportive research environment. The workshops brought together both seasoned researchers and young faculty members in different faculties, creating opportunities for networking, collaboration, and knowledge exchange among participants who shared common interests in grant proposal writing. These linkages are expected to lead to future collaborations, interdisciplinary

research projects, and a supportive network for ongoing professional development within the faculty.

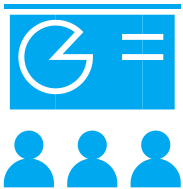
The grant writing workshops have seen a surge in grant seeking opportunities amongst the faculty. For example, the knowledge creation pillar has submitted 20 proposals. Out of these, 3 have already been awarded funding, 16 are pending a response and only 1 proposal was unsuccessful.



“ There has been slow response to calls previously due to lack of sensitization but now with more people participating in Afretec programs, we are looking to see a big difference in how we respond to current calls as a university community and with other partners within the network. ”

Afretec Knowledge Creation Pillar Head.
Prof. Thomas Ochuku Mbuya,

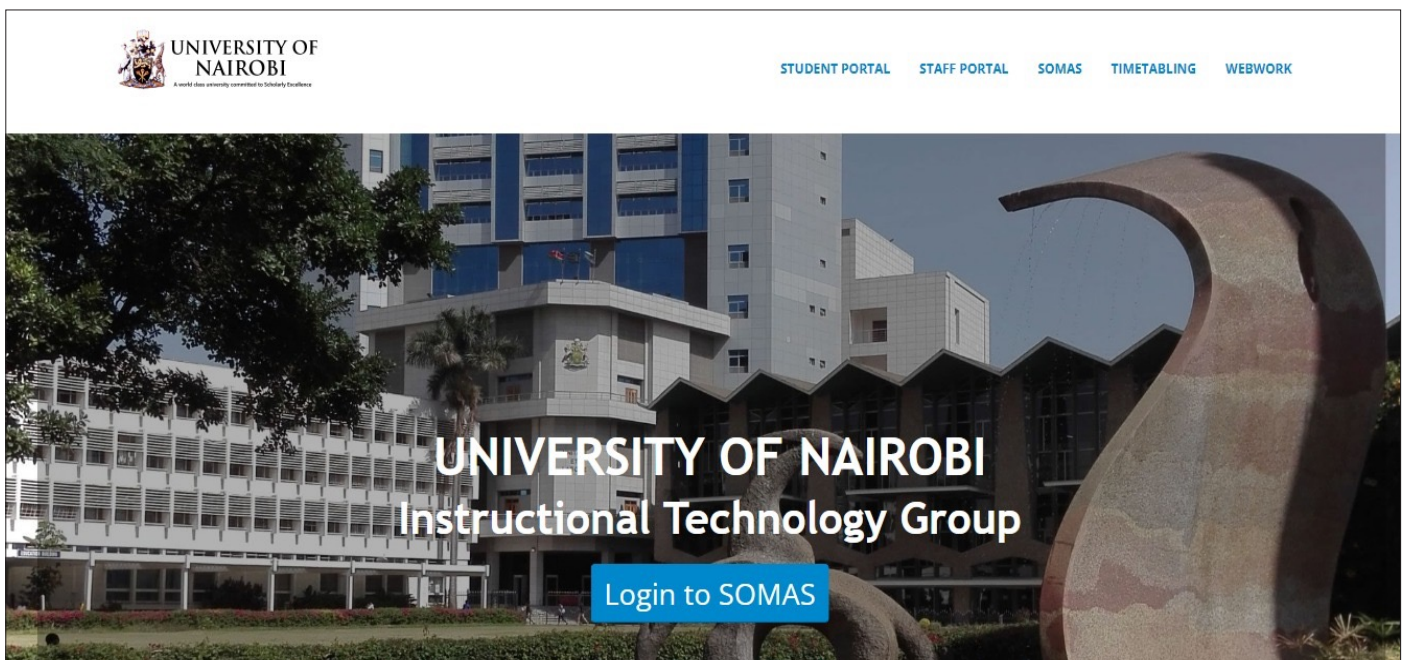
FROM PASSIVE LEARNERS TO CRITICAL THINKERS



40 ↘ **Members of Faculty**
trained on Problem -
Based Learning

The Teaching & Learning pillar held a workshop to explore problem based learning as a mode of teaching and learning. The workshop attracted young faculty members from various departments across the University.

Apart from the Problem- Based Learning, the T & L faculty training also encompassed a presentation of the advanced and re-engineered School of Mathematics & Statistics Platform i.e. SOMAS platform.



University of Nairobi Re – engineered SOMAS

SOMAS is an online platform for teaching, student learning and assessment in Science, Technology, Engineering and Mathematics. The platform serves as iLearning platform for students providing flexible learning experience and self-paced learning.

The platform also allows for timetabling of course units, examination schedules and digital space management. Moreover, it incorporates Webwork which is an automated homework assessment system that fosters engagement and encourages peer discussion in mathematical science.



EXPLORING THE FUTURE OF INTERDISCIPLINARY BIOMEDICAL ENGINEERING

In the rapidly evolving field of healthcare, the need for experts who can bridge the gap between engineering, science and medicine is becoming ever so important. As technological advancements continue to reshape the future of medicine, interdisciplinary biomedical degree programs are becoming increasingly popular and justifiably so.

These programs provide students with a unique opportunity to explore the intersection between biology, engineering and medicine which provides them with a strong foundation that sets them apart for a fulfilling career in healthcare and technology. Moreover, by combining engineering principles and medical knowledge, graduates can tackle various issues across the disciplines. This degree is also an opportunity for students to network with professionals from diverse backgrounds gaining a broader perspective on the challenges they are aiming to solve.

In this regard, the UoN Teaching and Learning pillar held a stakeholder workshop to discuss the curriculum of the planned interdisciplinary Biomedical Engineering degree course. The degree in Biomedical Engineering will be offered jointly by the Faculty of Engineering, Faculty of Science & technology and Faculty of Health Sciences in an effort to integrate the three disciplines so as to produce graduates who are well – rounded and efficiently equipped to address the complex challenges in the healthcare industry.

BRIDGING THE KNOWLEDGE GAP

COMPANY SERIES CIRCUIT



A student making a submission during a session of the Bridge / Company Series Program, Interactive Day



Students engaging with mentors from the Geothermal Development Company and Bureau Veritas during the Company Series Program, Interactive Day

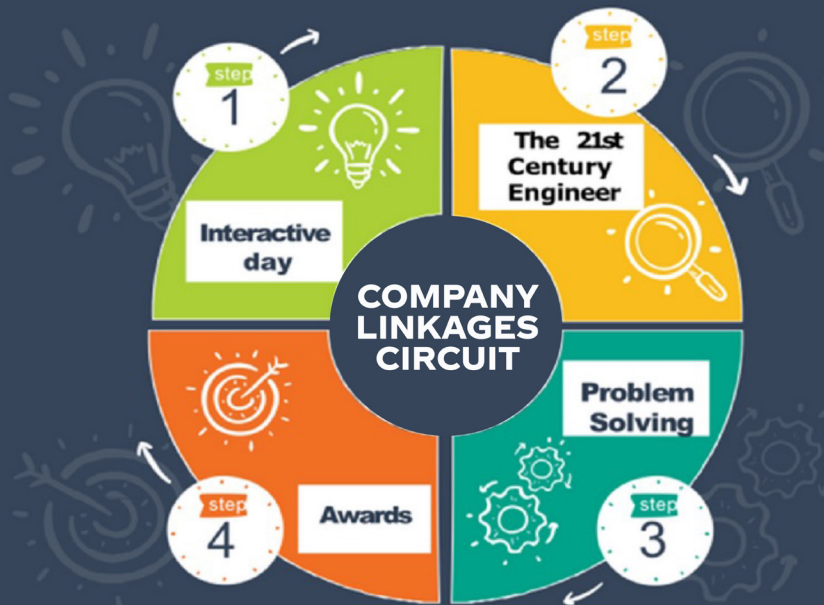
From building their professional networks to learning crucial 21st century skills, developing solution-based projects, building their portfolios and getting bountiful recognition at the end of it all, students have everything to gain from the Company Series program

The Company Series or Bridge program is an initiative that brings together industry professionals, students, and faculty members in a collaborative setting to bridge the gap between the students' academic life and their career prospects.

Hosted by the Directorate of University Advancement and made possible by the Afretec Annual Base Funding, the Company Series program is a multidisciplinary program that targets students for a year-long mentorship that prepares them for real-world experiences through their interactions with seasoned professionals in their fields.

The Company Series Circuit

The program is presented in four key phases namely; The Interactive Day, the 21st Century engineer, Problem Solving and Awards Ceremony.



During the Interactive Day, students get to familiarize themselves with the job market and industry expectations while understanding the difference between knowledge and competence. They also get to develop their interactive and communication skills through presentations. The 21st century engineer circuit is designed to teach students the 21st-century skills crucial for preparing them to thrive in the modern world and excel in various aspects of their personal and professional lives. These skills include critical thinking, digital skills, communication skills, leadership and adaptability.

Under problem solving or project – based learning, students actively engage in projects which seek to develop their knowledge, skills and competencies. Each student is required to come up with a research topic, conduct research, gather information, analyze data, and create a tangible product or presentation that showcases their findings and solutions. They are guided by industry experts and faculty members from ideation to creation.

Furthermore, for each complete training phase, there are virtual follow up sessions where experts delve deeper into the topics, providing valuable insights and reviewing student portfolios, projects and progress throughout the mentorship period.

The Company Series inaugural class of 2023 consisted of 5th year, from the Faculty of Engineering.

Partnering with Industry Partners GDC and BV, the program has been able to provide adequate mentorship and academic opportunities to 50 students from the faculty of engineering and looks to do more in the coming academic year.



Cohort 1 of the bridge program poses for a photo during a field visit to the Geothermal Development Company in the Nakuru Menangai power production plant.



Students interacting with mentors from Geothermal Development Company during a field visit to the company in Nakuru.

LEADING THROUGH INNOVATION AND ENTREPRENEURSHIP

The University of Nairobi is known as a budding hub for innovation and entrepreneurship with dedicated faculty members and a vibrant student body, all striving towards a common goal of excellence in learning and research. In the wake of digitalization, the university has doubled its efforts to improve its innovation and entrepreneurship ecosystem.



The Afretec Innovation and Entrepreneurship pillar engaged in various exercises and activities focused on mapping, defining, identifying and recommending an innovation ecosystem model for the University. The team identified different stakeholders and their roles, resources e.g. academic departments, institutes and research centers, labs, funding sources, government agencies, HUBs and private sector players as well as their linkages and possible areas for collaboration.

In addition to this, the pillar held a design thinking workshop where faculty members and innovators from the departments of Science, Engineering and Business were introduced to the design thinking process.

The trainers who were from the department of Computing and informatics, took the participants through the four stages of design thinking i.e. empathy, problem definition, ideation, prototyping and testing.

The ultimate goal of the mapping process is to build a system that is able to support students and faculty to scale their innovations from the lab and internal incubation spaces for commercialization.

Through this mapping exercise, the pillar also hopes to provide more insights on the emerging trends and the needs of industry, which should inform departmental research priorities, and the curriculum review needed to undergird innovation.

However, innovation and entrepreneurship at the university is not without its challenges. One of the key challenges has been commercialization of the developed products.

“The Innovation, Incubation & Commercialization lab has brilliant ideas from research but they do not know where to go to for commercialization and scaling. This is a gap that needs to be bridged so that our innovators and entrepreneurs can be compensated for developing their ideas and more people can also benefit from these innovations.” says Mr. Charles Katua, head of C4D Lab and member of the Innovation and Entrepreneurship pillar at UoN.

The innovation and entrepreneurship team is focused on improving the innovation and entrepreneurship ecosystem at the University of Nairobi, emphasizing the need to encourage particularly young innovators to develop their ideas and pursue them from start to finish.

RESEARCH AGENDA

The knowledge creation pillar launched Research Clusters in Health, Energy and Sustainability to support and build a wealth of knowledge in a consolidated manner. The university is therefore looking forward to a vibrant year in research due to this development.

- **Strengthening Local and Regional Response Capacities:** The Knowledge creation pillar to participate in collaborative discussions with local and regional partners, with the objective of enhancing capacity to respond to both local and AU-related calls.
- **Capacity Building for European Call-for-Proposals Response and Project Management:** The knowledge creation Pillar will also Undertake specific interactive sessions and support to build capacity to respond to the European call-for-proposals and to manage awarded grants/projects.

EDUCATION

The teaching and learning pillar has partnered with the department of Health Sciences and School of Business to conduct capacity workshops for select faculty members who will in turn train students for commercialization.

- **Lifelong Learning Module on STEM Education:** The teaching and learning pillar also seeks to develop a self-paced module on its SOMAS platform to facilitate lifelong learning for both students and staff. This course will be collaboratively created with Carnegie Mellon University - Africa and the University of Witwatersrand Johannesburg. A key component of the course will be to showcase the courses developed and the best practices identified in various STEM disciplines across the partner universities.

MAKERTHON

The innovation and entrepreneurship pillar will be holding a merkathon for student innovators across the six campuses during the Nairobi Innovation Week 2024.

INDUSTRY- ACADEMIA LINKAGES

The entrepreneurship pillar will be hosting an academia – industry workshop on the sidelines of the Nairobi Innovation Week to chart new ideas and paths for innovation, research and collaboration

- **Scaling up of the bridge program:** The entrepreneurship pillar aims to expand its bridge program to encompass two faculties: the Faculty of Engineering and the Faculty of Science and Technology
- **Integrating Industry Immersion in Innovation Fellowship Programs:** The entrepreneurship pillar set to Launch an innovation fellowship program targeting final year students, masters and PhD students from different faculties, and will run between 3 - 6 months. The participants form multidisciplinary teams and work to solve real industry problems that are identified and refined with industry.
- **Collaboration between UON, Gearbox, and Proteq for Design and Fabrication Academy:** The entrepreneurship pillar set to establish a strategic partnership with Gearbox and Proteq, aimed at providing final year students from engineering, science, and computing disciplines with access to the Design and Fabrication Academy hosted at Gearbox.
- **Innovation and Venture Building Series:** the entrepreneurship pillar to establish a series which aims to cultivate an entrepreneurial mindset among faculty and graduate students at the University of Nairobi (UoN) by hosting fireside chats, seminars, panel discussions, and workshops on topics such as innovation, venture building and funding, accelerators/incubators, and emerging technology innovations.
- **Mobaf Program;**The University of Nairobi is poised to issue a call for a mobility program aimed at funding PhD and Masters programs.



UNIVERSITY OF NAIROBI

AFRETEC NETWORK
BY CARNEGIE MELLON-AFRICA



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