



MACHAKOS UNIVERSITY

Co-Creating Sustainable Futures

MKSU NEWSLETTER

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MACHAKOS UNIVERSITY'S RESEARCHER SHINES AT THE KENYA NATIONAL RESEARCH FESTIVAL 2024

Machakos University has once again demonstrated its research prowess by securing a National Outstanding Researcher Award (NORA) during the Inaugural Kenya National Research Festival 2024 which was held on 19th – 23rd August 2024 at the Edge Convention Centre, Nairobi. The festival was jointly organized by National Research Fund (NRF), and Young Scientists Kenya (YSK), a non-profit organization that inspires and empowers the next generation of young scientists, innovators and entrepreneurs to transform their communities through Science, Technology, Engineering and Mathematics (STEM).

The festival marked the beginning of celebrating milestones achieved by Kenyan researchers. It will be held on an annual basis to recognize their impactful contributions in multidisciplinary research. The awarding ceremony was graced by distinguished guests including Mr. Fredrick Ndambuki, who represented Dr. Beatrice Muganda Inyangala, the PS, State Department of Higher Education and Research, Prof. Ratemo Michieka, Chairperson NRF, Prof. Dickson Andala, the Chief Executive Officer, NRF.

The event commenced with a keynote session on Innovative sustainable research funding

in the global south which discussed the development and implementation of new and creative ways to secure ongoing financial support for research activities in regions typically considered part of the global South, such as Africa, Latin America, and parts of Asia. The session, whose panelist consisted of Prof. Mike Kuria, CEO, Commission for University Education (CUE), Prof. Catherine Ngila, CEO, African Foundation for Women & Youth in Education and STI (AFoWYEST) and Dr. Vincent Okungu, a Senior Researcher from the University of Nairobi, highlighted that the funding will address unique challenges and opportunities in these regions, thereby promoting research that can lead to social, economic, and technological advancements while ensuring that the resources needed for such research are maintained over time.

Dr. Veronica Okello, a researcher from Machakos University received a Special Recognition Award under Women Researchers in the category of Physical Sciences, Technology and Innovation. The Award is given to Kenyan female researchers with 5 years and above research experience. Prof. Stanley Makindi, Acting Deputy Vice Chancellor, Research Innovation and Linkages, received this outstanding award in her absentia.



Prof. Stanley Makindi (Centre), with other Awardees from other Universities



Dr. Veronica Okello



Prof. Stanley Makindi, Ag. DVC (RIL) with a Panelist, Prof. Catherine Ngila, Executive Director, African Foundation for Women & Youth in Education and STI during the festival

MACHAKOS UNIVERSITY SUPPORTS NEW STUDENT AMIDST FUNDING CHALLENGES



On Monday, August 19, 2024, Alvin Lamenya, a first-year student enrolled in the Bachelor of Science in Hospitality and Tourism Management program, and his father made a heartfelt appeal on Citizen TV regarding wrong band placement in the new government funding model. The family expressed concerns about their financial situation and the inability to meet the updated fee requirements as they come from a humble background.

In a show of support and commitment, the Vice-Chancellor of Machakos University encouraged Alvin and his father to proceed with the admission process despite these challenges. The University Management extended a warm welcome to the family, ensuring that Alvin was admitted and accommodated in our internal hostels. The student also received assistance with filing an appeal to consider placement in a different band that reflect the family current economic status.

The Vice-Chancellor encourages all incoming students to report to the University as outlined in their admission letters. "Our staff is here to assist you every step of the way to ensure a smooth and successful start to your academic journey". She stated

MACHAKOS UNIVERSITY 2024/2025 COHORT ADMISSION AND ORIENTATION CEREMONY

Machakos University proudly opened its doors to the new cohort of first-year students from August 19th to 21st, 2024, marking the beginning of the 2024/2025 academic year. This exciting chapter began with an organized and spirited orientation program tailored to usher in our future leaders, thinkers, and innovators into their respective academic journeys.

Admission Schedule

The admission process was precisely planned over three days to ensure a smooth and welcoming experience for all new students:

Monday: Students admitted to the Directorate of Technical and Vocational Education and Training (TVET) and School of Engineering arrived, filled with anticipation and eagerness to embark on their technical and engineering paths.

Tuesday: The School of Business, Economics, Hospitality, and Tourism Management, along with the School of Pure and Applied Sciences, welcomed students into their programs. These schools are known for their dynamic

curriculum and commitment to blending theory with practical skills.

Wednesday: It was the turn of the School of Education, School of Humanities and Social Sciences, and the School of Agriculture, Environment, and Health Sciences. Each school opened its doors to a new cohort ready to tackle the pressing challenges of our times.

Orientation Highlights (22nd – 26th August, 2024)

Each day of orientation was structured to provide maximal support and information to our incoming students. The sessions were led by deans and heads of departments who introduced the freshers to university life, academic expectations, and the vast opportunities available at Machakos University.

The Vice Chancellor's session on the final day was a hallmark event, featuring motivational speakers, inspiring remarks by the Deputy Vice Chancellors and the administration of the Matriculation Oath, symbolizing the students' official entry into their academic voyage at Machakos University.



The Vice-Chancellor, Prof. Joyce Agalo delivering an inspiring address.



A joyful moment as new students meet the Vice-Chancellor, Prof. Joyce Agalo



First Year Students Admission Process



A visit to the Luban Workshop



First Years Orientation



A section of First Year Students tour the University Library

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Emmanuel Yogo
SAMU President

On behalf of the esteemed intellectual community at Machakos University, I extend a warm welcome to all our new students. As an institution our core mandate includes but not limited to academics, we aim at adding value to your life. The institution is based on principles of integrity, meritocracy, talent promotion and professionalism. I also take this opportunity to introduce you to our student government—a body that exists to serve you throughout your time here. As your current student leader, I assure you that we will diligently work to address your needs and provide exemplary service to all. At my capacity, I want to assure all of you that we shall work towards reflecting your needs and serving all of you. My government is inclusive and free from any form of discrimination.

"Welcome and happy that you are part of us."

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Harriet Amache
SAMU Vice-Chairperson

Esteemed comrades, first years here is the new beginning of another chapter of growth and exposure in our lives. I congratulate you all for making it here and taking the better step of joining Machakos University.

This is one the milestone in our lives and I am absolutely sure we will have many more milestones in the future that we are here to create. We are glad to have you as a university and we hope you will co-operate along with the values of the University and magnify its reputation at every go of life.

Welcome to Machakos University, together let us embrace education for industrial and economic transformation.

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Steve Biko
Sports and entertainment secretary

Congratulations on your admission to Machakos University! Welcome to our esteemed academic community. We encourage you to seize the opportunity to join a team or club, enhancing your university experience. Our campus boasts a diverse range of activities, including outdoor sports like soccer, rugby, hockey, basketball, netball, and handball, as well as indoor games such as table tennis, chess, and badminton. Moreover, we offer vibrant entertainment options, with music, dance, theater, and film clubs. As Eleanor Roosevelt aptly said, "The future belongs to those who believe in the beauty of their dreams." Engage fully, embrace every opportunity, and we eagerly anticipate celebrating your future successes.

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Hellen Adero
Academics and ICT Secretary

I would like to take this opportunity to welcome all the first years to the Machakos fraternity. This is a university of excellence where you will be able to experience the best in your campus years. This is the beginning of success and great achievements.

Welcome once again.

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STAFF OF MACHAKOS UNIVERSITY PARTICIPATE IN THE KENYA UNIVERSITY SPORTS ASSOCIATION (KUSA) INTER-UNIVERSITY GAMES AT KIRINYAGA UNIVERSITY.



The Machakos University Staff Sports Team FC recently showcased their athletic prowess at the Kenya University Sports Association (KUSA) Conference Central Staff Games, held at Kirinyaga University. Following an impressive performance in the group stage, where they triumphed in the preliminaries, the team earned their spot to compete in the prestigious inter-university games.

KUSA is a nationwide association of university staff, aims to foster social interaction, bonding, and networking among staff from various universities through a variety of sporting activities. This year's event was a grand gathering of champions, and Machakos University Staff Sports Team FC was honored to be part of it.

The team participated in both Football and Netball matches, demonstrating commendable skill and teamwork. Although they were edged out by Tharaka University in the Quarterfinals, the experience was enriching and filled with camaraderie.

The team expressed heartfelt gratitude to Vice-Chancellor for her unwavering support through mentorship and sponsorship, which was instrumental in their participation and performance at the games.

This event not only highlighted the competitive spirit of Machakos University staff but also emphasized the importance of sports in building community and enhancing interpersonal relationships within the academic sector.


TSINGHUA UNIVERSITY STUDENTS PAY A COURTESY CALL TO THE VICE CHANCELLOR



On Wednesday, August 6th, 2024, two research students from Tsinghua University, Beijing, China, led by Prof. Aobo Ran, a Research Assistant Professor at the Think Tank Center, Tsinghua University, Beijing, paid a courtesy call to the Vice Chancellor of Machakos University. The visit aimed to discuss and conduct research on the Luban Workshop and its effectiveness. The meeting was facilitated by the Research Division, led by the acting Deputy Vice Chancellor in charge of Research, Innovation, and Linkages, Prof. Stanley Makindi.

The meeting included key members of the University Management, the Dean School of Engineering and Technology, Dr. Charles Mwaniki, the Chair of the Department of Computing and Information Technology, Dr. Eric Omuya, the Head of Corporate and Public Relations, Ms. Valarie Katemi, Cloud Computing Instructor, Mr. Frankline Mutisya, and Luban Workshop Technician and alumni, Mr. Humphrey Mwambaji.

The Vice Chancellor warmly welcomed the visitors and expressed gratitude for their visit. She emphasized the significance of the exercise in gathering essential information to evaluate the effectiveness of the Luban Workshop for both the university and the broader community. She also highlighted how the activity would strengthen the ongoing collaborations between Machakos University and the Government of China through the Chinese Ambassador to Kenya.



The Vice Chancellor stated that the Luban Workshop at Machakos University has been instrumental in facilitating several key research and innovation projects for both staff and students. The workshop conforms to the demand for industrial development and has nurtured a number of skilled staff and students needed in the current global economic and social development. The workshop not only provides infrastructure for technical education but also fosters an environment for students to innovate in computing and engineering.

Students have been actively engaging in projects involving Internet of Things (IoT) for waste and water management, smart agriculture utilizing artificial intelligence, and mobile applications aiding transitions between education levels. Notably, students from various disciplines collaborated to develop a “Blind Eye” mobile application, designed to assist the visually impaired in navigating their surroundings. This innovation received recognition for its artificial intelligence technology and overall excellence at the Inter-University hackathon.

The workshop has also facilitated short-term mutual visits and exchanges programmes between Vocational and training Institutions in China and Machakos University staff and students, and through international skills and vocational competitions, such as the Huawei competition.

Dr. Eric Omuya and Mr. Frankline Mutisya are currently engaged in the Luban Workshop’s training program, integrating theoretical knowledge with practical applications, providing students with a unique opportunity to translate classroom teachings into tangible skills.

The Department of Computing and Information Technology (CIT) currently offers the following programs:

1. Bachelor of Science in Cloud Computing and Information Security
2. Bachelor of Science in Computer Science
3. Bachelor of Science in Information Technology
4. Huawei Certified ICT Associate (HCIA) in Cloud Computing (Professional Training)
5. Huawei Certified ICT Associate (HCIA) in Artificial Intelligence (Professional Training)
6. Huawei Certified ICT Associate (HCIA) in Datacom (Professional Training)

Future outlook for the Luban Workshop includes; Expansion of the workshop to include emerging technologies as a center of excellence. Increase the number of industry partnerships to support the workshop expansion and acquisition of more equipment to support the growing number of users and student practice. Provision of basic Chinese language courses to staff and students to enhance ongoing collaborations.

In collaboration with partners such as Konza city, Huawei and KENET, Machakos University’s Luban Workshop extends its impact beyond the community and country at large. The visit from Tsinghua University students marks a significant step in fostering international collaboration and enhancing the research capabilities of Machakos University through the Luban Workshop.

FEATURED RESEARCHER FOR AUGUST 2024




Dr. Benjamin Kikwai earned his Ph.D. in Geometry (Algebraic Geometry) from the prestigious Scuola Internazionale Superiore di Studi Avanzati (SISSA) in Italy. His doctoral thesis, titled “Multiplicativity of the Generating Functions for Refined Node Polynomials on Toric Surfaces” was approved cum laude in 2016. Prior to his Ph.D., Dr. Kikwai pursued a Post-Graduate Diploma in Mathematics at the International Center for Theoretical Physics (ICTP) in Italy, where he researched elliptic curves and elliptic curve cryptography. He also holds a Master of Science in Pure Mathematics and a Bachelor of Science in Mathematics, both from the University of Nairobi, where he graduated with

first-class honors.

Dr. Kikwai has held several significant appointments throughout his career. Since 2019, he has been a lecturer in pure mathematics at Machakos University, where he is involved in curriculum development, delivering lectures, academic research, and committee service. In June 2022, he was appointed as the Examination and Timetabling Coordinator, responsible for coordinating exam settings and ensuring adherence to examination regulations. In October 2021, he became the Coordinator of Income Generating Units, administering university income-generating policies and identifying business opportunities.

Dr. Kikwai’s research interests are diverse and cover several areas of mathematics. His notable work includes the paper titled “Refined Node Polynomials via Long Edge Graphs,” published in Communications in Number Theory and Physics. In this paper, the authors used long-edged graphs, which are discrete abstractions of tropical curves, to show that the generating functions for refined node polynomials associated with certain nodal curves on tropical surfaces exhibit a multiplicative nature. Additionally, Dr. Kikwai has worked on elliptic curves and their applications in cryptography, including pairing-based cryptography. Earlier in his career, he researched the modular representation theory of the symmetric groups. He also has an interest in operations research, having worked on the university timetabling problem and implementing it as a computer application. His other publications include studies on generating functions of refined relative node polynomials, university course timetabling using mixed integer programming and Python, and the effects of magnetic induction on unsteady MHD nanofluid flow.



Dr. Kikwai has actively participated in numerous conferences and workshops, furthering his knowledge and contributing to the academic community. At the 2021 Nairobi Workshop in Algebraic Geometry, he gave several talks on enumerative geometry, tropical curves, their abstractions, and their use in the study of enumerative geometry. Dr. Kikwai participated also in the AMS-EMS-PMS Joint International Meeting which was held at the University of Porto in 2015. Other notable conferences include the Conference on Geometric Correspondences of Gauge Theories held at ICTP Italy in 2013, the ICTP-IPM Workshop and Conference in Combinatorics and Graph Theory held at ICTP in 2012, the School and Workshop on Computational Algebra and Number Theory held at ICTP in 2021, the Summer School and Conference on Modular Forms and Mock Modular Forms and their Applications in Arithmetics, Geometry, and Physics held at ICTP in 2011, the East African Summer School on Linear Algebra and Fast Fourier Transforms held at Makerere University, Kampala, Uganda in 2010, and the Linear Algebra – From Bases to the Google PageRank Algorithm held at the University of Dar-es-Salaam, Tanzania in 2008.

In addition to his academic pursuits, Dr. Kikwai has a keen interest in software development. He has been instrumental in creating software applications to support the Kenyan transport and logistics space, including a digital motor and marine insurance certificates application. His expertise spans multiple programming languages and frameworks, including PHP, Java, Python, R, C/C++, and JavaScript, as well as database management and server administration.

Dr. Benjamin Kikwai's dedication to mathematics, research, and software development makes him a valuable asset to the academic community. His contributions continue to advance the field of pure mathematics.



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