DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

2021

Souvenir

MAGAZINE









Editorial Team

Magazine Coordinator
Dr. Eddy Owaga

Chief Editor
Faith Mutheu

Managing Editor
Risper Thuku

Editors
Peris Wamuyu
Winnie Aketch

Pictures
Anthony Maundu
Donald Neko

Contributors
Content for this publication has been developed by University Staff and designed and printed by Castel Technologies Limited
Tel: 0721878463
Email: casteltechltd@gmail.com

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VICE CHANCELLOR'S MESSAGE



Welcome to the 10th Graduation of Dedan Kimathi University of Technology. This marks yet another milestone in the University calendar when we celebrate the culmination of years of hard work.

The University remains committed to providing an academically stimulating, culturally diverse, and quality learning environment that fosters research, innovation, and technology development towards producing relevant technical and managerial human resources and leaders to contribute to the attainment of national development goals. The programmes offered by the University are approved by the Senate and the various designated accreditation bodies.

We are spearheading the establishment of the Science and Technology Park (STP), which will be an engine for innovation, development, incubation and commercialization of technology developed in the University. This will in turn stimulate the development of entrepreneurships, which will drive job creation in the country and develop self-reliant youths.

Last year and as part of the DeST-Park, we launched the DeKUT Film, Animation and Gaming Hub to ensure that we empower our graduates with superior skills and the requisite mindset that they need to deal with the challenges they face. This was an initiative by the University and Kenya Film Commission which seeks to devolve filmmaking and create opportunities at the grassroots. The Film, Animation and Gaming Hub is already operational with over 35 trainees at the moment. This Hub is open to students, staff, and members of the public who are animators or film makers.

To the graduands, we have given you the skills and competencies you require to adapt to the dynamic realities of the modern job market not only as a worker but most importantly, as an innovator or job creator.

The whole university is proud of your achievements and therefore celebrates with you. As you pursue your dreams out there, be good ambassadors of DeKUT.

Congratulations to the class of 2021.

Prof. Eng. P.N. Kioni
Vice Chancellor

MESSAGE FROM DEANS AND DIRECTORS

SCHOOL OF SCIENCE



On behalf of the School of Science, Dedan Kimathi University of Technology, I offer my heartfelt congratulations to the graduating class of 2021. I would also like to offer my sincerest congratulations and gratitude to the family members who have encouraged and supported you. There are 97 undergraduate and 19 diploma students graduating this year. This year was full of challenges posed by COVID-19, which ravaged the globe and led to the university's closure for months, however with determination and cooperation, you have made it to graduation.

Please take this opportunity to reflect upon the time you devoted to your studies and your interactions with your colleagues and faculty members. Nothing would please us more than knowing that all of you were able to gain a true appreciation for the philosophy of DeKUT

As you go out there, you have been equipped to transform our society positively and bring change. Take the opportunity boldly and be a true ambassador of DeKUT. As you participate in shaping our new future, remember the lessons you learned while "social distancing" during COVID-19.

Congratulations again to our graduates and keep in touch. Remember to stay safe during these difficult times of the Covid-19 pandemic.

Dr. Douglas Onyancha
Dean School of Science

INSTITUTE OF FOOD BIORESOURCES TECHNOLOGY



Congratulations on your well-deserved success. On behalf of the IFBT staff, we are proud of you and happy to share in the excitement of your graduation day. Chasing a dream requires efforts and passion. At this important milestone in your life, congratulations and best wishes for your continuing success. May your graduation from University be the beginning of a bright future. Best wishes for a wonderful career ahead! Remember the past, live in the present and look forward to the future! May your graduation be just the beginning of a lifetime of fulfilment for you. You will make mistakes and be wounded many times in your life. Don't give up - it's just an experience. Wishing you to find your star and reach for it! Enjoy your graduation and best wishes with all your plans!'

Dr Eddy Owaga,
Director IFBT

INSTITUTE OF GEOMATICS, GIS & REMOTE SENSING

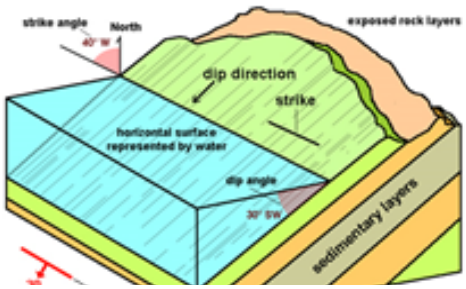


Congratulations on your graduation! It excites me to present a new lot of well-trained and highly qualified graduates in three of our programmes, i.e., MSc in Geospatial Information System & Remote Sensing, BSc in Geospatial Information Science & Remote Sensing and BSc in Geomatics and Geospatial Information System. As an institute, we are proud of your effort despite the challenges caused by the COVID-19 pandemic. It's proof of your resilience and determination to excel regardless of the prevailing circumstances. As we celebrate your success, a new chapter awaits you. It's my prayer that you apply the skills and knowledge gained in addressing the societal issues by supporting the implementation of the Sustainable Development Goals, Africa's Agenda 2063 and Kenya's Vision 2030. We wish you all the best in your career and future endeavors!

Dr. Arthur Sichangi
Director IGGReS

INSTITUTE OF GEOTHERMAL ENERGY TRAINIG AND RESEARCH

Congratulations to
BSc in Geology Graduands of 2021



In May 2017, when you touched base with DeKUT main campus in Nyeri to embark on your four-year journey as a Geology student, you probably never imagined your graduation day would eventually arrive. Well, it has. You are now armed with a Dedan Kimathi University of Technology degree in Geology. In fact, your cohort is the first to do so from this great institution of higher learning. We are sure you feel so proud of yourselves for completing your studies. So, how does it feel to graduate finally? It must be great. We at GeTRI are happy that you are getting closer to your dreams. This is the day that all the hard work you have put in finally pays off. This is day can also be termed as the beginning of your success. Your degree is not just a piece of paper. It is the set of wings that will help you fly away and start your career as Geologists. You may have graduated today, but you were a winner in our eyes since May 2017 when you joined us.

Congratulations.
From GeTRI Community

SCHOOL OF BUSINESS, MANAGEMENT AND ECONOMICS



Congratulations, School of Business Management and Economics (SBME) class of 2021! We are proud of your great achievements. When you joined the University, during the orientation, some of you were full of anxiety while others were excited about college life. Well, you did it! You worked hard and showed amazing resilience, especially in the last year of your study during the Covid-19 Pandemic. You were patient and quickly adapted to the new mode of learning. You all weathered a challenging storm with strength, grace and tenacity. The degree and diploma you have earned from DeKUT today is a great achievement. It should be celebrated together with all those who supported you in this journey- parents, guardians, families, friends and colleagues.

As you embark on your next career move, we wish you all the best. The world is vast and full of opportunities that require your gifts and talents. Go and exploit your potential. Identify your purpose, live it, and follow your dreams. You have been given the powers to read and do all that appertains to the degree, go and change the world! Remember that what you have learned here is not enough to advance you in life. Learning must continue if you are going to get far and make a difference in the society. Indeed, "Continuous learning is the minimum requirement for success in any field", Brian Tracy. Therefore, strive to be a lifelong learner.

Congratulations once again for what you have achieved and what you will. We wish you all the success in life.

Dr. Ann Sang,
Dean, School of Business, Management and Economics

INSTITUTE OF TECHNICAL AND PROFESSIONAL STUDIES

I proudly celebrate your success in completion of your respective diplomas and certificates. With this diploma/certificate you have added more power in yourself, but as they say, power comes responsibilities. Kenya is facing numerous challenges at present and requires your contribution in dealing with them. I have a firm belief that your intelligence, skills and knowledge will help Kenya buoy through these challenging times. The resilience which you have manifested through these unprecedented times of a global pandemic, multiple lockdowns, difficulties in placements, job shortages, online challenges and constant system failures is commendable. I hope that you continue to nurture the seed of your knowledge and skills which we have planted in this institution to cope with challenges that lie ahead. I congratulate you on your achievement today and wish you success in your path ahead.

By, Erastus Karoki,
Director ITPS

INSTITUTE OF GENERAL STUDIES

We, staff members from the Institute of General Studies, take this opportunity to congratulate all the graduands during this graduation ceremony. We take pride in you as our former students in Introduction to Philosophy and Critical Thinking, Communication Skills, Governance and Ethics and all other University of Common Courses that you took from our Institute. We wish you and your future successes abundant blessings. Congratulations.

By Prof. Theuri Matthew M., PhD
(Director, Institute of General Studies)

SCHOOL OF NURSING

The school congratulates all the graduates and wishes them a great future full of Gods' blessing. We acknowledge the immense effort that you have put into attaining this milestone today. We join you today as you celebrate your achievement with your family and friends. May this day remind you that hard work is always rewarded. We believe you have had great experiences in DeKUT, which will help you practice and grow your career.

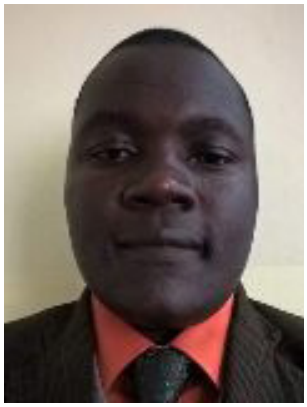
The world today is facing new challenges in health, including emerging and re-emerging disease. With your qualification, we encourage you to look for an opportunity to be part of the solution that the world is looking for. Nursing is a caring profession; may you remain passionate about offering care to the best of your knowledge and skills.

We believe we have adequately equipped you with knowledge, skills, and the right attitude to offer the best care and ensure that every patient or client under your care attains the highest standard of health care, including reproductive health. Nursing is a respectable profession, and we encourage you to represent the profession wherever you go and in whatever you do. As the profession continues to grow, may you also grow to achieve your full potential in Nursing.

All the best in your future endeavors.

Dr. Florence Mbuthia,
Dean School of Nursing

INSTITUTE OF TOURISM AND HOSPITALITY MANAGEMENT



Félicitations the 2021 graduating Class !
2020 began just like any other year! Comparable to any other visionary being, all the squares on your plan chart for the year were all filled. Many of you eagerly looked forward to continuing normally fourth-year studies. But boom, the corona virus pandemic entered Kenya and spread at an unexpected rate! As part of the government's containment measures, pupils and students were directed to go home. Those, among you, who had completed the twelve weeks attachment, maybe, smiled, but those who had not wondered why it had to be them! When the travel restrictions gained momentum, the juicy "COVID 19 holiday" turned into frustrations. The many unanswered questions and imaginations pitched camp in our minds. What next? The clock was ticking very first. Graciously, DeKUT is a University of Technology in words and actions! When other institutions suspended learning completely, DeKUT pulled out its technological bullet.
Slowly, by slowly, we walked together the journey of e-learning. Despite the numerous challenges, namely poor Internet connectivity, students' balancing household chores and learning, we all completed the race successfully! Through discipline, hard work, hopefulness, resilience, and virtual collaboration, we all achieved our desired goals, demonstrating that people can still achieve their aspirations even in the time of a pandemic. It all requires deliberate determination and the right mindset! COVID 19 has taught us that nothing under the sun is permanent, every economy's foundations were shaken, and therefore, nothing is eternal! Those who are agile, versatile, imaginative and ready to unlearn to learn have unlimited opportunities! They are the Heroes of today and tomorrow.

You defied the odds to come this far, and that is why we celebrate you today, May 28, 2021. We trained you well, and we know you're capable.
Félicitation l'équipe de 2021 !

Dr. Misiko
Director ITOHM

PRESIDENT UHURU KENYATTA LAUNCHES A ONE-OF-A-KIND TECHNOLOGY FACTORY AT DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY



DeKUT is spearheading the establishment of a Science and Technology Park (STP), which will be an engine for innovation, incubation, development and commercialization of technology. This will in turn stimulate the development of entrepreneurships, which will drive job creation in the country and develop self-reliant youths.

Through the STP, Dedan Kimathi University of Technology aims to enter into the league of Entrepreneurial Universities, which leverages on research and innovations to create intellectual property (IP) rights, spin-off companies and entrepreneurships to promote sustainable economic growth of the University and the Nation.

tensify application of science, technology and innovation through interplay among the Government, the Industry, the academia and the society. This would be realized by pursuing three thematic areas which are: Agri-tech (Food bio-resources and natural products value-addition), Information and Communication Technology (ICT) and Design, Materials and Manufacturing (DMM).

DeST-Park has attracted anchor clients; Snowcap Development Limited, KK-Nairobi Limited and Semiconductor Technologies Limited.

The Semiconductor Technologies Limited Factory was launched this year which was presided over by His Excellency Uhuru Kenyatta, President of the Republic of Kenya. The factory, which is the only one of its kind in Africa, manufactures nanotechnology products such as integrated circuits and sensors used in electronic gadgets for the global market. Its products have a high demand and are used in electronic

gadgets such as mobile phones, televisions and laptop computers.

The establishment of the Semiconductor Technologies Limited (STL) in the University is a major milestone in the development of Dedan Kimathi Science & Technology Park (DeST-Park). This is an important platform that brings together professors, innovators, capital and business expertise to work together to support the development of new innovations and the creation of new commercial enterprises to create employment and increase the wealth of the society hence contributing to improved standards of living.

"This is the dream some of us have for this country, our ability to become an industrialized nation, to be able to create good quality and well-paying jobs for our young people," the President said during the launch as he acknowledged this great milestone by the STL and the University working with the various partners and stakeholders. He further pointed out that Kenya's unique companies like the Semiconductor Technologies Limited (STL) will transform the country from one that consumes products from other parts of the world to one that exports not only her products but also her technology across the globe.



By, Faith Mutheu & Risper Thuku

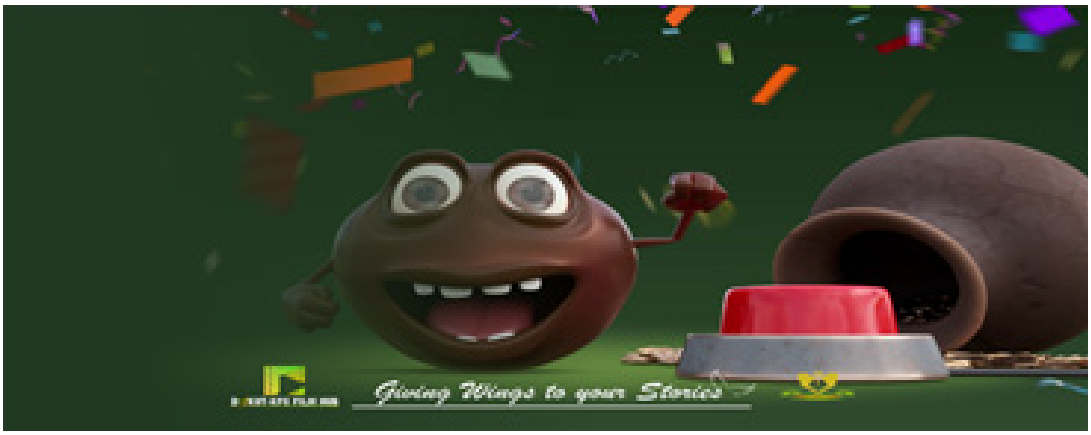








UNVEILING OF THE DeKUT FILM, ANIMATION AND GAMING HUB



"Did you know that the public has an appetite for anything about imagination? Anything far away from reality; As creatively as possible." ~ Steve Spielberg.

At the hub, we don't dream at night rather, we dream all day. We dream for a living. We dream as far as possible away from reality. And for that, the 2020 baby was born, DeKUT-KFC Film, Animation and Gaming Hub.

The hub was officially opened by the Cabinet Secretary, Ministry of ICT, Innovation and Youth Affairs, Hon. Joe Mucheru, E.G.H, on 21st May 2020. This was after DeKUT signed a Memorandum of Understanding with the Kenya Film Commission.

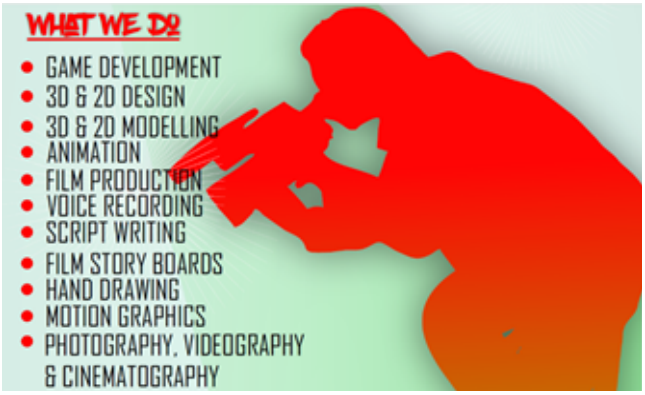
DeKUT Film Hub is anchored on Kenya's Vision 2030 dream to transform Kenya into a newly industrialized, middle-income country. The partnership aims at providing a platform where young people and interested parties in creative art can use technology in film making and participate in the production of digital media products that can be marketed widely. It is an industry that provides employment to a lot of young people and where you can achieve a lot with very little investment. It is prudent to develop the capacity of those going to use the facilities and therefore an important aspect to scale the Human resource and get more people involved in the project. This creative industry is open to students, staff, and members of the public who are animators or film makers.

Development of a capacity-building model

The hub was commissioned at a time when the country and the world at large was navigating through challenges resulting from the COVID-19 pandemic. Even then, the hub made the first baby step in August 2020 when the University recruited two animation interns and trained more than 10 staff members on script writing. Up to the end of 2020, the focus remained putting in place structures for the growth and development of the hub. One of the structures was to initiate capacity building model and programs that would allow the hub to venture into the entertainment world.

i. Human Resource Capacity Building

The team at the hub has grown tremendously, thanks to the University Management, Government of Kenya, and the student fraternity who have each contributed to this human resource growth. The team consists of members of University staff, DeKUT interns, Public Service Commission interns and DeKUT students.



Additionally, the hub works closely with other students and members of staff in the University, usually outsourced for particular roles. This group of hardworking men and women give wings to your stories through their creative works in Filming, Animation and Video Gaming.

DeKUT-KFC Film Hub team at work



Filming at the hub involves scripting writing, filming, voice recording and other subsequent production stages. Animation involves creating anime characters(cartoons), 3D and 2D modelling of scenes while video gaming is where we sport on the computer. They are rough simulations of everyday life, including or probably what you do for a living. Among the many things we do, our goal is to do them with customer satisfaction for the consumers to watch our content repeatedly.

ii. Staff and Intern induction training



To equip the new team at the hub with important professional skills, the hub undertook a one-week induction training for its members in February 2021. These skills enhance smooth and efficient workflow and increase overall team productivity.



iii. Talent Search

The hub endeavors to promote local talent through production of African films, animations and video games. To tap on the local talent, the hub held its first search for film actors and

voice auditors among DeKUT staff and students.





DeKUT K.F.C. Film Hub Students' Acting Auditions on 17th December 2020

iv. Short courses



To grow the requisite human resource capacity for the industry, the hub offers training opportunities for short courses in the film industry. The courses are designed in a manner that helps individuals acquire and develop valuable and relevant skills. Two short courses were launched in September 2020; Certificate in Animation Production and Script Writing.

Honor Visits

The hub has proven to be the heart of production for digital media and learning products in the country, resulting in many honorable visits. One of the major visits was a courtesy call by the French ambassador H.E. Aline Kuster-Menager. The hub has also been privileged to host the CEO, ICT Authority, Dr. Katherine Getao, E.B.S., who donated two books to the students. The hub has also attracted benchmarking visits from Embu and Bomet counties. On 1st and 2nd of March 2021, the hub was privileged to host Kalasha writers' interviews for Laikipia, Kiambu and Nyeri counties organized by the Kenya Film Commission.

In conclusion, the hub is so grateful for the overwhelming support by the University Management and the associate departments that have been part of her journey. We appreciate every effort made to ensure that our growth is steady. We are hopeful that as the year unfolds, great things will unfold too. We can only imagine how bright the hub's future is, and we invite all of you to join us in this amazing journey.





By Ruth Muriithi

DeKUT SPEARHEADS THE FIGHT TO COMBAT THE COVID-19 PANDEMIC

Since the emergence of the Corona virus pandemic in the country, Dedan Kimathi University of Technology decided to look into several initiatives to provide local solutions to the local problems in combating the Covid-19 pandemic. Striving to provide research and capacity development in the country, the University started creating and producing items such as; hand sanitizers, hazmat suit, face masks and ventilators.





As an institution which believes that self-actualization and solutions to global challenges are attainable, our experts in the Chemistry department took to the labs and produced a powerful hand sanitizer. After the certification by the Kenya Bureau of Standards, the University joined other local manufacturers in producing locally made sanitizers hence curbing the challenge that resulted to the sudden rise in shelf prices of hand sanitizers supplied by other commercial industries.



As a way of boosting the availability and affordability of the face masks to every common citizen, the University under the Fash-

ion and Design department in the Institute of Technical and Professional Studies (ITPS) developed reusable face masks. This comes at a time when the government requested that everyone puts on a mask. However majority of people could not afford the masks whose prices had shot up at the beginning of the Covid-19 pandemic. Since then, the university has been training personnel from various counties on how to make the masks and produce more for the country. The masks are cheap and reusable making them easily available to ordinary citizens.

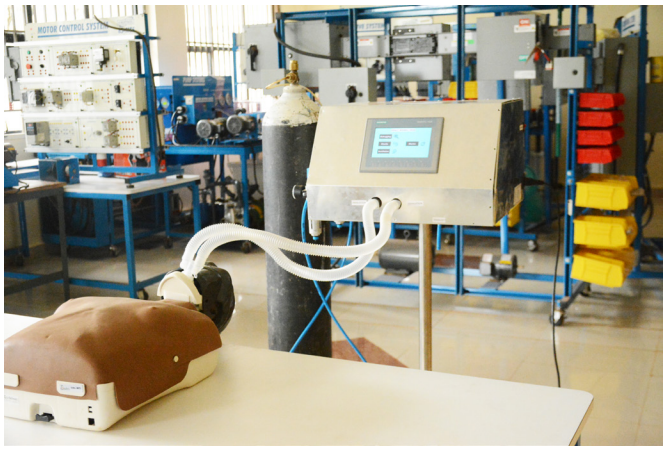
The university also under the Fashion and



Design department in the Institute of Technical and Professional Studies (ITPS), developed a protective equipment (Hazmat suit). This was developed in response to the rising concern about the medical personnel, who are at the frontline of fighting the Corona virus pandemic. The equipment is designed to protect the medics from contamination while handling patients and unlike most of other hazmat suits from other manufacturers; the suit is affordable and reusable.

DeKUT School of Engineering and Health Sciences also came up with a ventilator prototype as a mitigation method of the Corona virus pandemic. Apart from the protective equipment's to curb us from the Corona virus pandemic, the university also found a way to ensure that services continue to both our students and staff members. The university created a Center for Open, Distance, and eLearning (CODeL) that supports **our mis**sion in providing quality education to our students. The main objective of the CODeL being to facilitate teaching through online platforms. The Universitys' Learning Management System (LMS) provides lecture notes and learning materials that are organized for self-paced learning. Students can now access learning resources such as notes online as well as receive real time online lectures whereby lecturers stream classes to students remotely. Staff also benefit from this as the University's' web conferencing tools allows them to hold online meetings.

The online platforms have benefited our Module 111 students who only report for a few weeks into the campus. The platform has also facilitated blended learning for university common units and postgraduate students in both our Main and Nairobi campus.



By Faith Mutheu & Risper Thuku

DeKUT PARTNERS WITH NG-CDF NYERI TOWN CONSTITUENCY TO SUPPORT THE DEVELOPMENT OF MURINGATO PRIMARY SCHOOL



Last year, Dedan Kimathi University of Technology and NG-CDF Nyeri Town Constituency signed a Memorandum of Understanding to support the development of Muringato Primary School. This was presided by the assessment of the physical facilities of the school and the establishment of the infrastructural needs of the school since the previous structures no longer supported the educational needs of the students and failed to meet the current standards of a modern primary school.

A Brief History of the School

Muringato Primary School started as a school for the coffee plantation workers. Later, in 2006 the school was moved to the handball fields. However, the site was not conducive for the school and in 2009 when the University was established, it was moved to its current location.

This location was picked because it had an ideal learning environment and better road access. The University approved the production of the architectural designs that incorporated the classrooms from Kindergarten, to Primary school and later on to University. Over the years, the University has supported the school in creating income-generating activities as well as food security activities such as the establishment of a greenhouse. This was through the University's partnerships with other universities and Rotary clubs that saw the school benefit in various ways including a grant of 400USD from a Canadian Rotary club as well as books from the Rotary Club of Nyeri.

Students from the University have over the years adopted the school, coached and mentored the students through clubs like the Rotaract Club of

DeKUT. These clubs have undertaken projects in the school such as computer literacy, hygiene and sanitation programs and sport development programme.

The University Council has also supported the school through the approval of space and the allocation of funds. Furthermore, the University has been closely engaged in the governance of the school and has through the years placed a nominated DeKUT staff member in the Board of Management (BoM). This has helped in ensuring that the school is geared towards growth of the school and best outlook of the students.

The future looks bright for Muringato Primary School as the University continues to expand. As the Cancer center and Science and Technology Park (STP) grow, the University envisions that the school will cater to the educational needs of the children of the people who will be working in these institutions. These children will be able to transition from Kindergarten, to primary school through to secondary school then to University.













By Faith Mutheu & Risper Thuku

DeHUB, AN INNOVATORS SPACE AT DeKUT

DeHUB a hub located at the foot of Mt. Kenya, at Dedan Kimathi University of Technology in Nyeri county. The hub was launched in March 2015 to support innovation to commercialization. Although the hub is at the university, it supports innovation from people around the Mt. Kenya region. The hub has supported over 100 startups over the years.

Our main activities at the hub include; incubation, mentoring through meetups, training and hosting competitive hackathons that give us innovation for incubation. We host mini hackathons called (Hack Rush) every fortnight Friday 7 pm to Saturday 7 am to continue the culture of brainstorming and teamwork. This keeps most innovators motivated and through the exchange of ideas, the quality of innovations at the hub has been assured.

DeHUB has proved to be the leading innovation hub in the Mt. Kenya region. We have attracted international recognitions such as the UK high commissioner H.E Jane Marriot.

The High Commissioner's visit was to see and interact with different innovators and their innovation and extend the support through the UK Tech Hub Kenya.

TOP STARTUPS AT THE DeHUB

PLANT SIGNAL



Shadrack Kiprotich – Chief Executive Officer

On June 27th -29th, 2019, we participated in the Engineer's Hack challenge held at the DeHUB Nyeri organized by the Microsoft Student Ambassadors. This was the initial brainstorming of the idea and getting to identify what the farmers were encountering. This was when Plant Signal came into formulation.

Plant Signal is a company that seeks to help farmers against pre-harvest losses caused by pest and diseases. Just by taking a picture of the suspicious crop, the farmer gets a real-time diagnosis for analysis and takes affirmed action therein.

Since the conception of the idea, we have been able to make good progress on the solution. After the Engineer's Hack, we got incubated by DEHUB to continue working on the solution. In September 2019, we had a chance to showcase Plant Signal at the Annual ASK Nyeri Agricultural Showground. It got the attention of most the farmers on how they could get real-time diagnosis on what affects their crops and get remedy on what to use on the farm. We had the privilege of presenting it to the Former Agriculture Cabinet Secretary Mwangi Kiunjuri, Kenya Forestry Services, Agrochemicals stores, among other public institutions.

As part of our journey, we have visited farmers around Nyeri on their farms. Some of the regions include Embassy, Kiawara, Kahawa estate, Chaka and Kieni, where we talked to the

farmers and did the actual field training. One of our farmers, Mr. Kuria, had plenty of challenges with pest and diseases. We had the opportunity to visit his farm. We could see and feel his pain as he narrated how he harvested nothing after investing over Ksh.150,000 into his greenhouse. He is just one among the many farmers whose farms have faced major losses due to crop diseases. This kind of losses not only affect farmers but trickles down to us. Loss in yields leads to food shortages and an increase in food prices.

As a company, we have also participated in various hackathons in the country, notably the FursaVsVirus Challenge organized by the National Youth Council, where we did exemplary well and emerged the national winner. This is where we got a honorable mention by the President of Kenya, HE Uhuru Kenyatta, during the International Youths Day.

Recently Konza Technopolis and Association of countrywide hubs organized the Great Covid 19 Challenge. Through this challenge, we got into the acceleration program where we had intense business and technical training. We also received funding from the UNDP which was a game-changer to the company. We had a chance to showcase our product to the British high commissioner H.E Jane Marriot through the program.

During the acceleration demo day on 10th -12th March, we presented to Walid Badawi, UNDP resident representative in Kenya, among other high officials from the Kenyan government and also outside Kenya. We have also been in contact with companies outside Kenya seeking partnership to establish themselves in Kenya

In conclusion, we would like to thank the University through DEHUB for giving us a stepping stone to build the company

IBEES

"An automated AI powered beehive that increases honey production reduces labor use and reduces colony loss."

Authored by:



Jackline Tum (Co-Founder IBEES)

Bees are vitally important for the health of our planet. For every third bite of food we take, bees are the responsible pollinators. Worldwide, approximately 1,000 plants grown for food, beverages, fibers, spices, and medicines need to be pollinated by bees to produce the goods we depend on to exist in this world. In recent years annual bee colony losses have reached an unprecedented 30%. If Colony Collapse Disorder continues, we will be missing more than just our coffee and chocolate if it results in our bees dying off for good.

Beekeeping is a major economic activity and a major source of livelihood in most of the semi-arid areas of Kenya. According to USAID, Kenya as a country produces 7300 Tons of honey, which is 3.6B Kenya shillings annually. This is only 20% of Kenya's bee production that has been tapped from a potential 30,000 Tones. We lose 19.6B annually from the untapped bee Keeping.

To reduce this gap, the government recently allowed citizens to keep bees on public lands such as forests to increase their livelihood and as

part of the community's customary forest management system to help them defend the forest against intruders. Moreover, through Women empowerment groups, beekeeping was introduced to help rural women improve their livelihood while increasing their income, yet they still do not get value for this. In sophisticated night heists, thieves harvest the honey while stealing the beehives making these women go to losses and putting their livelihood at stake. This is sometimes at the threat of life of the honey badger - This rodent is listed as the least fearful animal in the Guinness book of records. According to a local bee farmer, the honey badger can attack even a lion by scratching the eyes with its sharp claws. Its skin is thick and tough to the extent that a machete, arrow, or spear cannot easily pierce it. Stings from bees cannot chase it away. At the same time, it releases a "very strong" odour that scares its enemies. When it releases the odour, the bees move away from the honeycombs.

Moreover, sustaining apiaries in the face of Colony Collapse Disorder based on traditional labour-intensive work practices has become a hindrance to apiaries' profitability. Regular hive inspections are labour intensive and dangerous to these women. Frequent intrusive hive inspections disturb the bees, which might make them abandon the beehive.

These challenges inspired my co-founder and I to come up with IBEES to help beekeepers make the most out of their time and reduce the frequency of dangerous intrusive hive inspections while still detecting problems within the hive in real-time.

IBees is an automated beehive solution that lets bee farmers monitor the health of their beehive in real-time on their phones. Once installed on the beehives, bee farmers can:

- Know the level of dampness, which may lead to pest and diseases infestation or even lower the quality of honey produced.
- Know the weight of their beehive to know the best time to harvest honey with out frequently disturbing the bee colony.
- Get real-time alerts via SMS or Ibees app notification when their beehives have been knocked over or stolen.
- Smoke detection, which might be a sign of intrusion or honey stealing.
- When the Queen has stopped laying, and the colony is about to become broodless.
- Ibees mobile notification allows bee farm ers to monitor all these things in real-time and keep records such as harvests, tasks and operations, and even send them notifi cations to remind them of inspections.

We have finished developing the prototype, and in early March, we had successful tests at a Bee Farm in Nyeri. We plan to roll out to other bee farmers all over the country in the next few months.

We appreciate the support we have been getting from DeHUB, where we are currently incubated. Through the tireless entrepreneurial lessons we got from Dehub, we can model the entrepreneurial aspects of our startup. We also got opportunities to link up and interact with large bee farms better to understand their needs to potential customers through DeHUB. As a startup incubated at DeHUB, which is also a member of Countrywide Innovations Hub, early last month, we got the opportunity to showcase our product to HE Jane Marriot OBE, the British High Commissioner of Kenya.



Figure 1 Jackline Tum pitching to HE Jane Mariot OBE about Ibees

Our goal is to help beekeepers make the most out of their time and reduce the frequency of dangerous, intrusive hive inspections while still detecting problems within the hive in real-time. We are currently looking for financial support to roll out to all bee farmers all over the country. We have the solution, so help us scale it up to the end-users.
Co-author: Clinton Oduor (Co-Founder IBEES).



Figure 2 IBees Co-Founder Clinton Oduor Installing Ibees at a Bee farm

INTELLIVOLT

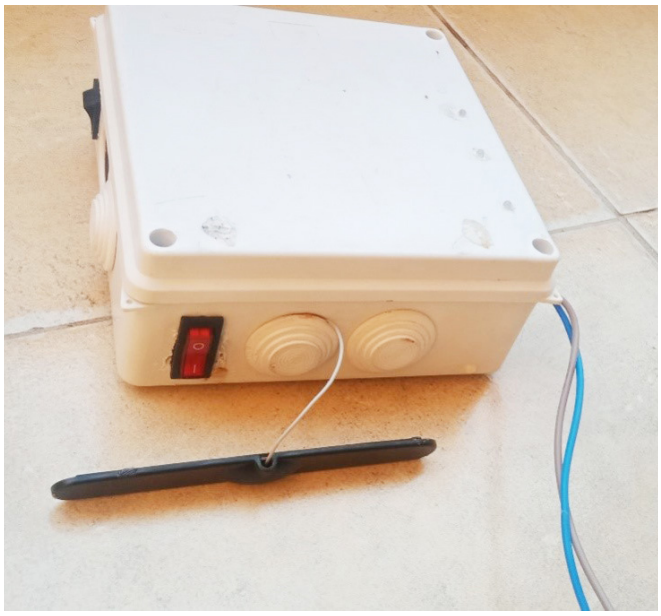


Power outage is not only a local problem but an international concern. In Africa, power is considered a luxury and when it comes to its supply, it can mean life or death. One hundred fifty babies died on oxygen concentrators at a hospital in Jinja, Uganda, after the UMEME utility company experienced a prolonged outage.

Every year, millions of dollars go down the drain due to unplanned and prolonged power outages. Power entities depend on customer calls to generate maintenance reports, and this causes a delay in fixing the fault.

Therefore, we, Aron Ayub and Edison Nguniri, having identified each other's skills set in PCB design, IoT, Sigfox and machine learning, came up with an Intellivolt System that provides real-time data, the precise location of the fault and can detect anomalies such as transformer overloads, over voltage, and under voltages.

We first presented our idea at the Engineers hack in 2019 that was organized by Microsoft student's ambassador Joshua Wakiru. This is where we met the DeHUB co-ordinator,B Kenneth Njihia who couched us through the 72hr Hackathon. We also presented the idea at



the ASK showground held at Kabirui-ini in 2019 where we got positive feedback from energy sectors interested in the idea. After realizing that Power Outage was a global problem, we participated as team INTELLIVOLT and presented the idea in Imagine Cup competition and emerged at the top 40 in the world. As Martin Luther Kind Gr said, "Somewhere along the way, we must learn that there is nothing greater than to do something for others. " We can't forget Mr Njihia who constantly guided us in our everyday progress. His help was invaluable; this reminds me of his everyday calls to ensure everything was in order. Along the way, the use of laboratory was of essence, DeKUT being a great resource, a University of Technology was at the top-notch to helping us with the University Machines Lab for prototype testing purposes. As team Intellivolt, we presented the project in the imagine cup world presentations and emerged

world finalist. This stirred and motivated us to develop a startup company to provide Power failures and related problems using the latest technologies in IoT, design and machine learning. We are looking for well-wishers who would partner with us to bring our dreams to reality as a young company. We plan to fully establish the startup and provide solutions in tech by making our world a better place to stay through technology.
Device

MAKINI

"Promoting digital inclusivity in access to quality education to promote lifelong learning opportunities for all."



Authored by Clinton Oduor

Among the world's most vulnerable communities, education is a tool to transform lives. Millions of primary-aged children worldwide would give anything to be sitting at a desk and learning with children of their age. The COVID-19 pandemic has caused a global education crisis that has led to the switch from physical to online learning. This aggravates the situation on an already ill system coupled with poor electricity and internet connectivity, gender discrimination and people living with disabilities. Marginalized communities are being denied access to inclusive and quality education by the system. These children cannot go another day without learning.
Recently, the government launched the one child one laptop program to bridge the gap of quality and inclusive education, ignoring the lack of requisite infrastructure problem. Only 10% of schools were connected to the grid, while 50% were far from the national grid. Schools also lacked the facilities to safely store the devices, considering the many cases of school break-ins where books were being stolen. Moreover, the content in the tablets was static and could not be updated due to connectivity issues. As a result, many children across still faced the problem of access to quality content.
Across Africa, radio lessons are also transforming lives when it comes to access to learning materials. The fact that they are battery powered makes them popular, especially to the off-grid communities. Their portability makes them even the best fit for pastoralists communities that move from one place to another when herding. The problem with radio lessons is that they are fixed when it comes to timing and reduces reliability to access to content when a learner of a particular grade wants to access the content at a particular time. For instance, a learner of a particular grade will have to wait till the following week to access content of a particular subject since all grades need to be covered within the day.
As a result of these challenges, my team at Cafrilearn was inspired to come up with Makini. Makini is an offline, interactive, portable, affordable and battery powered digital learning device to reach and empower vulnerable communities using audio. Described as an "offline search engine for content"
Makini leverages the latest tech advancements in Natural languages processing to understand the intent of a learner and give him/her the best answers to questions asked. Using Makini, a learner can even access him/herself. We rely on community feedback to improve our device. As

a result, Makini lets learners rate the content delivered to them and collects data of any device issues for further improvement. All these data are collected the next time the device connects to the Makini mobile application via Bluetooth. Content in the device can also be updated via Bluetooth from our mobile application



Figure 1 Muringato Primary School Children interacting with Makini

This year we were also privileged to be among the World Finalists at the Microsoft Imagine Cup Education Category. Being a worldwide competition, it was a very fulfilling experience learning that the world was appreciating the impact we are creating with Makini.

We are partnering with local publishers and other content creators to embed curriculum-based quality content on Makini so that all learners in remote communities can access them easily at their convenience. We call upon local governments and educational development organizations, and any other interested volunteer to come and join us make education accessible to all and to promote lifelong learning opportunities for all.

We give special thanks to DeHUB for mentoring and walking with us all through the process. Through design thinking mentoring, we were able to learn how to put yourself in the shoe of the people who will be using your product so that we understand their needs better. We would also like to thank Mr Ali Juma Shaibu and Dr. Ciira for their untiring technical support.

Team



Figure 2 Humpry Shikunzi



Figure 3 Lilian Patience



Figure 4 Collins Emasi

By **Kenneth Njihia – DeHUB Co-ordinator**

DeKUT LIBRARY SERVICES TO PERSONS LIVING WITH DISABILITY



The DeKUT University library collaborates with the other departments within the University to support the institution's education goals by providing information resources that enable the transformation of information into knowledge. The mission and vision of the library are well stated these are:

their ability to use these services fully and independently. The University is committed to ensuring equity in terms of information access by all its customers. Accessibility for persons living with disabilities is not only limited to the physical library but also access and utilization of the many online resources available in the form of databases and websites.

"To provide competitive, adequate and relevant information services in support of learning, teaching and research".

"To be an information centre that provides access to quality information that enhances research, training and technological advancement".

The university library has a major role in meeting the information needs of all students, lecturers, & administrative staff by acting as a centre of information collection, storage, retrieval & dissemination. The library also strives to offer various services to persons living with disabilities (PLWDs) and are designed to enhance

These cover a wide range of academic disciplines on offer at the University.

There is a wide range of innovative services and systems offered by the library, including 20,000 databases of electronic journals and over 200,000 electronic books, digitized past papers for revision purposes, digital repository,

and relevant software to enable optimized usage of all the available e-resources. The library is in the process of creating an audio library to cater for the special needs' users whereby the visually impaired members are facilitated to access information. This involves conversion of information materials from written format to audio format and thereafter, uploading them into the Institutional repository for accessibility. The audio library is cloud-based and accessible via the internet.

As part of capacity building the library staff have undergone several training and awareness sessions on how to assist PLWDs and also participated in disability mainstreaming and awareness workshops. These trainings have enabled them to attain the much-needed important disability awareness and customer service techniques which include: empathy, respect, patience, flexibility in time schedule, courtesy among others. All staff even those that do not work at the circulation service counter, have undergone disability awareness training targeting attitudinal change through the acquisition of positive strategies equipping them to serve the persons living with disabilities better.

The university library is also in the process of having a fully-fledged section within the library. The section will have all the necessary assistive or enabling technology which include devices, tools, hardware, or software, which will enable, all learners and university staff living with disabilities to access and utilize their material content and resources via the Internet from anywhere. Some of the assistive technologies include: screen reading software, screen magnification software, braille display, alternate input devices, alternative pointing devices etc. We welcome you to visit the University library for all your information needs.



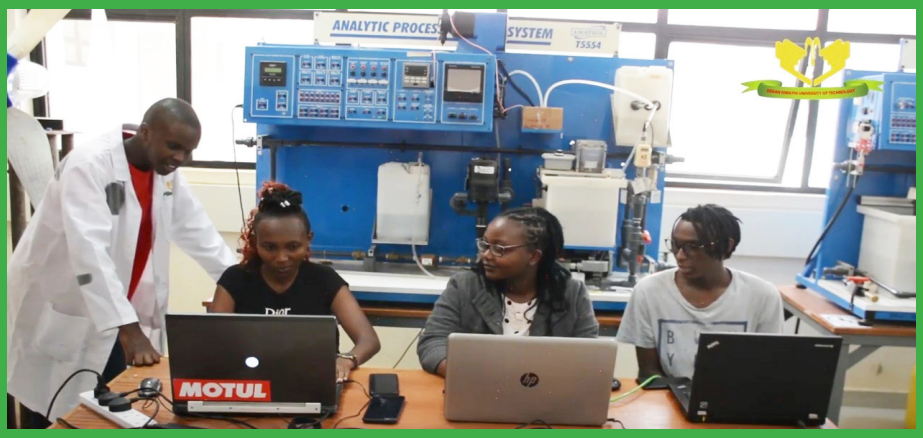


Feel free to share your experiences and expectations with us through our library
email: librarian@dkut.ac.ke and phone: +254-724-245-756.

By Paul Mbua

DeKUT STUDENTS IN THE MIDST OF THE FOURTH INDUSTRIAL REVOLUTION

FROM DIGITAL TWIN TO DIGITAL TRIPLET



In the fourth industrial revolution, cyber-physical systems have begun to change the way various systems work. To support engineers' activities, a more developed extension of digital twin, known as digital triplet, is slowly emerging and gaining popularity in the modern world. But what is a digital triplet? What does it entail? To answer this question, a group of fifth-year students, who are also in Siemens Mechatronic Systems Certification Program (SMSCP) Level III, developed a digital triplet for the Analytical Process Control Module. The Digital Triplet of this module consists of intelligent systems that interact with both physical and virtual systems to monitor and control activities in real time.

The Digital triplet of the Analytical Process Control module is equipped with facial recognition security which is programmed to allow only authorized individuals to control the module. The program uses an algorithm that writes and saves images of the individuals who have accessed the machine and the time of access; this is an important security feature since in case of a machine breakdown, it will be easy to know who was responsible for the fault that occurred. Another intelligent feature of this project is the ability of the system to recognize voice commands. It doesn't stop there; the system is designed in a way that after it has recognized the face of an individual with access rights, it greets the individual by name and requests for instructions from the authorized user. An authorized individual can command the machine to start, stop, and determine set point of the controller and so on. In case an unknown or rather unauthorized individual wants to have access to the machine, the individual will be denied access by this system.

When an authorized user is, for instance, bored and would like to have a chat with the machine, an Artificial Intelligent (AI) Chabot incorporated in the system will aid the user to interact freely with the machine. The chatbot model was achieved by using deep learning to train it with possible words a user might say and possible responses. To crown it all, the system uses a Human Machine Interface (HMI) to monitor and control operations. The introduction of HMI in the system is to enable authorized users interact with the system in case of emergencies or faults that might occur with the facial recognition and speech recognition of voice commands.

The fourth industrial revolution demands more than just skills, it demands the openness of one's mind to receive, synthesize and make meaningful choices in the ever-changing world. The DeKUT Siemens Mechatronics System Certification Program (SMSCP) not only offers opportunities for embracing Industry 4.0 but also serves as a pathway to the technological dynamic world.

By **Prof.Eng. Jean B. BYIRINGIRO**

DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY (DeKUT) UNESCO CHAIR IN ANTICIPATORY SOCIO-TECHNICAL SYSTEMS

In February 2020, DeKUT held the first meeting to discuss the call by UNESCO on Futures Literacy. The meeting was chaired by Prof. Ndirangu Kioni, Vice chancellor. Given the short period for the proposal that was due in mid-April 2020, a lean team headed by the Vice Chancellor was put in place to work on the proposal. This team was able to submit the proposal two days before the due date. The designated Chair is housed in the Centre of Economic Policy and Technology Development (CePTED) in the School of Business Management and Economics. Though the University is yet to receive the official communication on the Chair, informally, DeKUT has been designated the Chair and this was evident during the Global summit on Futures literacy held on 8th and 12th of December 2020, where DeKUT was given a chance to host an exhibition booth on futures literacy. Further, the University was listed among the universities holding the Chair on Futures Literacy.

The Chair, in living to her mandate of enhancing Futures Literacy (FL) among DeKUT staff, students, partners and relevant stakeholders, has engaged in a number of activities including:

a) Organized a three-day virtual workshop held on 28th to 30th July 2020. The theme of the workshop was "Towards Building a Futures Literate Society – Re-Imagining Innovation". This workshop brought together resource persons from Paris, South Africa and Kenya with participants drawn from Kenyan public and private universities, civil society organization, county governments, state agencies as well as young entrepreneurs.

b) Participated in the Virtual Global Summit on Futures Literacy held on 8th to 12th December 2020

The exhibition booth was organized into four thematic areas and each of the thematic areas had several people addressing the specific theme:

- The University as a product of Anticipation: Prof. Ndirangu Kioni Vice Chancellor, Former College Board/Council Members including Mr. James Waibochi and Mr. D.N. Wachira.
- Embedding Futures Literacy in DeKUT: Dr. Moses Ollengo, Prof. Jean Bosco, Dr. Juma Misiko and Dr. Monica Mburu
- Equipping society with Futures Literacy Capabilities: UNESCO Regional Office, KNATCOM, DeKUT Trainer of Trainers on Futures Literacy including Prof. Murimi Ngigi, Dr. Anne Sang and Dr. Rosemary Kagondu.
- Bringing Futures Literacy into Social and Policy Discourse: Video by Prof. Ososti and Dr. Kagondu plus the students on the proverbs from various cultures that teach the discipline of anticipation.

All these videos will soon be available in the DeKUT UNESCO Chair webpage coming up soon. Visit and learn more about DeKUT as a University of Anticipation.

Our appreciation to all people who took time to record a video, our able Public Relations Team for your unrivalled services in delivering the videos and the steering committee spearheaded by Prof. Kioni, Dr. Gatune, Dr. Kagondu, Prof. Osotsi and Ms. Kinyingi. We also appreciate our IT team headed by Dr. G. Kamau, who ensured we had the right size video for the exhibition booth. Indeed, this was a great learning session for the team.

c) Organized a three-day virtual workshop on the Youth and Future of Work

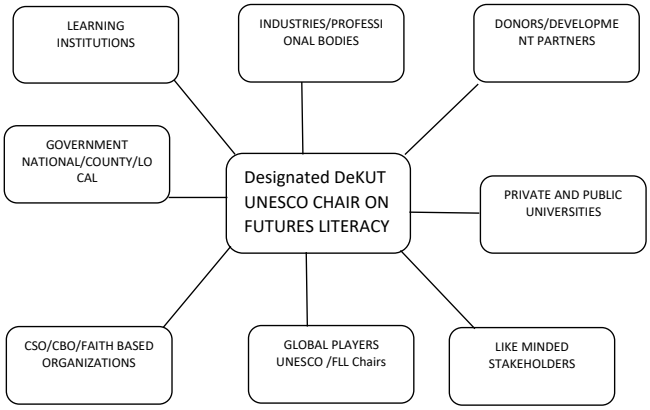
The workshop is scheduled to take place from 14 to 16th April 2021. The workshop brings together youth from Kenya nominated through DeKUT, KNATCOM and VSO. Further, in strengthening the capacities of locals to deliver on futures literacy, a team of trainers were trained on 8th and 9th of April 2021. Those being trained for the second time will lead in facilitation while new trainees will shadow them from these trainers. However, the workshop will get a boost from key international experts who continue to mentor upcoming local experts.

The DeKUT UNESCO Chair is committed to taking the lead in developing a critical mass of futures literate scholars, policy makers, business leaders, aware of the types of anticipatory systems and processes they use and the reasons for doing so. Through this Chair, DeKUT will have a direct impact on UNESCO strategic objectives including:

- Empowering learners to be creative and responsible global citizens
- Strengthening Science, Technology and Innovation systems and policies nationally, regionally and globally
- Promoting International Scientific Cooperation on critical challenges to sustainable development

The Chair aspires to become a regional center for building capacity in futures literacy and will seek to build a network of both national and regional organizations. It will also seek to support Africa 2063 agenda. The Anticipatory Socio-Technical Systems Chair will contribute to the Country's Medium Term, the Big Four Agenda including manufacturing, food security, decent housing and universal health care by creating capacities to anticipate at a national level.

Designated DeKUT UNESCO Chair on FLL networking partners

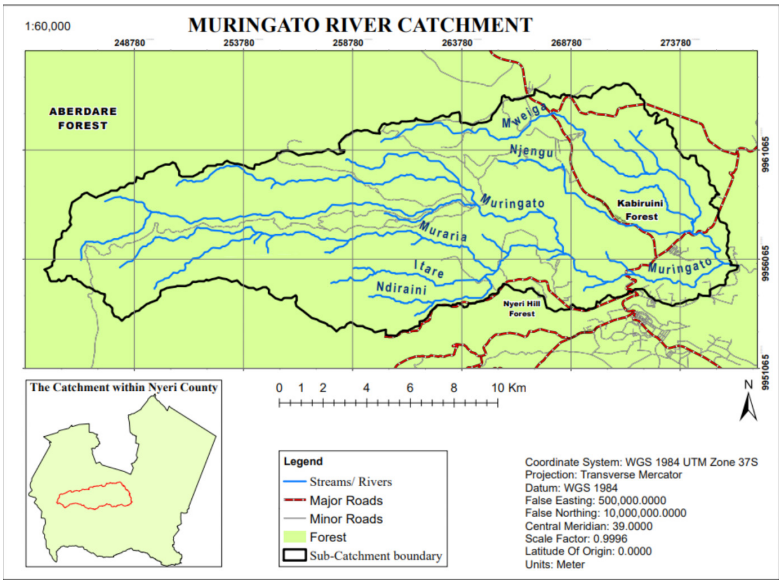


By Lucy Kinyingi, Institutional Advancement

DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY WINS A GRANT TOWARDS THE MAPPING AND CONSERVATION OF THE MURINGATO SUB-CATCHMENT AREA

Environmental sustainability is an aspect that every community strives to achieve in utilizing the available natural resources. In reality, however, the attainment of environmental sustainability has been curtailed by various factors, key among them being anthropogenic factors. One notable effect has been the reduction in the amount of water discharge from the rivers. This has been reported by various organizations charged with water resource management in the country, one of which is the Muringato Water Resource Users Association (WRUA).

The Muringato WRUA jurisdiction extends through the Muringato sub-catchment area, covering approximately 225 square kilometres. It stretches from the Aberdares National Park through Kabage Forest downstream to the confluence of Muringato River and Honi River. This is illustrated in the figure below. Thus Dedan Kimathi University of Technology (DeKUT) is a member of the Muringato WRUA.



Map showing the extent of the Muringato River catchment in Nyeri, which will form the focus of the mapping and conservation project

One of the mitigating factors to counter environmental degradation has been the involvement of the communities in the direct management of their resources. DeKUT, by virtue of being a direct beneficiary of the Muringato resources as well as being in line with the university's core mandate of research and fostering linkages decided to explore the possibility of partnering in a research geared towards involvement of the Muringato community members in the sustainable management of its resources through collaborative research.

The German Federal Ministry of Education and Research (BMBF) made a call for funding on June 26, 2019, whose main objective was to support African Scientists who return to African

universities and research institutions after research stays in Germany to make an important contribution to the establishment or further development of national research and innovation systems in Africa, within the framework of a German-African cooperation project and at the same time the scientific networks established with Germany by working on joint research topics to expand further. Given that the funding was in line with the university's interests in the conservation of the Muringato sub-catchment, the university, through the Institute of Geomatics GIS and Remote Sensing (IGGReS), constituted a research team, comprising of Prof. Mundia, Prof. Kuria, Dr. Sichangi and Dr. Kuria, to answer the call and initiate partnerships with the Ruhr University Bochum (RUB) in Germany. The 500,000.00 EUR grant application was successful with the two partnering universities sharing out the amount.

The funding concept is titled Participatory Approach to Environmental Conservation of the Muringato Catchment Area for Sustainable Management and Enhanced Ecosystem Health. The overall project objective is to incorporate a participatory approach to environmental conservation of the Muringato sub-catchment area, for its sustainable management and enhanced ecosystem health. The research aims on building upon the results of a previous baseline survey undertaken by IGGReS which identified lack of proper water resource management, coupled with unsustainable logging, quarrying and agricultural activities, as the main challenges threatening the existence of the Muringato sub-catchment area.

Three main objectives will be addressed within this project:

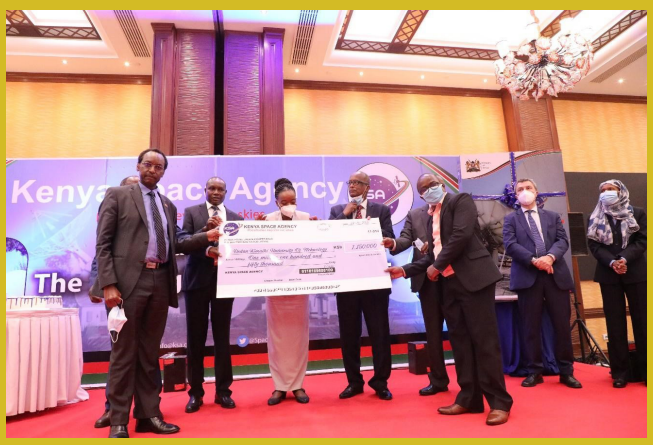
1. Development and implementation of GIS tools to simulate the sub-catchment status and aid in sensitizing the members on the need for conservation.
2. Development and implementation of a crowd mapping platform through which the community can collect relevant data and transmit it, with the results being used to map and monitor the sub-catchment resources and activities.
3. Hydrological modelling based on Spatial land-use and land cover modelling and scenario simulation with in the catchment area. This will aid in predicting future land use/ land cover trends to sensitize the community mem bers and stakeholders on the need for the conservation sustainable use of the sub-catchment.

The study will be undertaken for a period of three years, commencing in February 2021 up to December 2023. 1 PhD and 2 MSc students will be engaged in the project as well. Participatory approach is a key component of the study and will be incorporated with the local community that will be engaged through the Muringato Water Resources Users Association (WRUA), of which DeKUT is a member as well as other key stakeholders including Kenya Forest Services (KFS). The study reports shall be availed to all stakeholders upon its completion.

By Dr Kuria B. Thiong'o

DeKUT AMONG THE UNIVERSITIES HOSTING THE KENYA SPACE AGENCY (KSA) OPERATIONAL SPACE WEATHER CHAIR

A consortium of three universities, among one which is DeKUT won a KES. 5,000,000 grant from the Kenya space Agency (KSA) to implement an Operational Space Weather monitoring network, disseminate data products, and capacity building in space weather research.



Award of the research chair on Operational Space Weather presented to DeKUT during the launch of the Kenya Space Agency Strategic Plan 2020-2025.

Space weather refers to the time varying conditions on the sun and in the solar wind, magnetosphere, ionosphere and thermosphere that influence the performance and reliability of space-borne and ground-based technological systems and can endanger human life or health.

The implementation framework of the project will target the impact on these technological systems, i.e. Navigation Satellite System (GNSS), energy infrastructure, communications infrastructure, aviation, geophysical exploration, surveillance radar among others. The overarching aim of the research will be realized through the following objectives:

i. To establish space weather ground-based nodes at Dedan Kimathi University of Technology, Taita Taveta University, and the University of Eldoret. The ground-based nodes will be equipped with sensors to capture adequate data for processing and analysis.
ii. To develop a command station computer-aided design system to capture and store the collected weather data.

iii. To set up a transceiver subsystem at Taita Taveta University that will relay data from telemetry, tracking and command station to the KSA.

iv. To conduct extensive research and outreach activities in Operational Space Weather.

v. To develop a robust space weather forecast model for early warning systems with an appropriate graphical user interface. This will ensure that space weather disasters are arrested before any devastating effect is experienced.

Dr. Arthur Sichangi, Dr. Kuria Thiong'o, Ms. Caroline Gikwa and Mr. Dennis Gitundu of the Institute of Geomatics, GIS and Remote Sensing will coordinate the DeKUT lead objectives.
By **Dr Arthur Sichangi**

DeKUT AND LAIKIPIA COUNTY GOVERNMENT COLLABORATE TO BUILD STAFF CAPACITY IN PROJECT MANAGEMENT

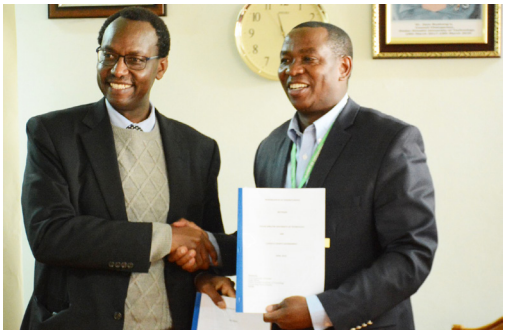


The Project Management Institute defines a The Project Management Institute defines a project *"as a temporary endeavour undertaken to create a unique product, service, or result"*. Projects permeate our daily lives; from the mundane- such as starting a kitchen garden at home, to the extremely complex- such as the ongoing effort to roll out Covid-19 vaccines globally.

For governments, both county and national, projects are how public funds are utilized to improve citizens' quality of life. By and large government budgets are structured along the projects. A glance at the key highlights of the 2020/2021 Kenya budget shows that KES 1.8 trillion will be allocated to various sectors such as education, health, infrastructure and national security. Much of that money will be spent through projects in these various sectors such as expansion of schools, construction of roads and purchase of equipment. Projects are therefore a critical component of service delivery, efficient use of public funds and sustained economic growth. Successful implementation of projects would support the key pillars of sustainable development and Kenya's development blueprint as outlined in Vision 2030 and beyond and achievement of the intended outcomes of County Integrated Development Plan 2018-2022.

Project success can partially be viewed as a successful combination of a number of factors including; project quality, time and budget as internal parameters. Improved quality of life

and the success story of the project's targeted beneficiaries could be regarded as the dominant external parameter for project success. Unfortunately, it is regularly documented that some projects in Kenya at both the national and county level do not meet the project success threshold time and again. News reports of poor quality or defective products and projects that have delayed beyond their allotted time are all too common, but perhaps most common are those projects that have overrun their budgets and those that suffer "scope creep". On the other hand, are those many projects, which can be regarded as successful projects but never get published! The unfortunate with the latter scenario is that without communication, the awareness as regards the improved and / or perceived quality of life remains low. The probably ultimate and unfortunate outcome is *"unfavourable ranking"* of a well performing government(s). County governments are expected by their citizens, to demonstrate results within a relatively short period of time. As such, *"what projects are implemented",* achieved outcomes and communication of the same to stakeholders is important for social-economic development in a county. The County government, through a needs assessment identified the need to build capacity in important areas of project management including but not limited to; project leadership and management, project communication, project risk management, project planning & control, contracts management. Included also in the modular programs are contemporary areas of Information technology in project management and system thinking in project management.



In its County Integrated Development Plan 2018-2022 , Laikipia County identifies poor capacity enhancement as a challenge to delivery of its mission; *"to enable every household in Laikipia County lead a prosperous life".* It is in cognizance of the need for these skills that Laikipia County and DeKUT have collaborated to undertake capacity building in project management for the staff of Laikipia County.

This is in line with the University's mission *"To provide an academically stimulating culturally diverse and quality learning environment that fosters research, innovation and technology development towards producing relevant technical and managerial human resource and leaders to contribute to attainment of national development goals."*



The program has so far enrolled one hundred and thirty-six county staff in four different cohorts comprising of middle and senior level staff who oversee county projects and who play a critical role in project success. This is a testament to the county leadership's commitment to its mission. The staff will be equipped with multidisciplinary competencies to manage projects effectively and efficiently in a rapidly changing environment. This capacity building program endeavours not only to sustain but also progressively enhance implementation of highly impactful projects in Laikipia County for the achievement of the county's vision.: "The Greatest County with the Best Quality of Life"

Laikipia County Governor; Hon Ndiritu Muriithi (seated to the left of the Vice Chancellor Prof Ndirangu Kioni), , Deputy Vice Chancellor, Prof. Esther Magiri, DeKUT Faculty and Laikipia County Senior Staff during the launch of the Post graduate program.

The Post Graduate Diploma in Project Management is housed in the Dedan Kimathi University of Technology School of Business Management and Economics but is a multidisciplinary program that draws from the University's rich diversity of teaching staff. It also incorporates guest lectures as a tool of blending industry practice. Students in this one-year course are taken through all facets of project management, from initiation to closure. The course is structured into three progressive modules and covers modern tools and methods of project management, 'soft' skills required for successful project management such as leadership and communication, as well as other aspects of projects such as project finance, management of contracts and information technology in project management. The idea is to give the students a 360-degree view and competence when dealing with all types of projects.

This program is unique as it uses a 'project based' approach to learning and assessment, meaning students are required to identify actual county projects that they are involved with, and are required to apply what they are learning continuously as they implement those projects. Additionally, in support of the new competence-based systems of education in Kenya, this program incorporates a competency-based approach training for sustainable project management outcomes. This way, the course is also practical and is expected to create real impact on the ground for the citizens of Laikipia County.

It is expected that on completion of this course, there will be an increased likelihood of improved project outcomes in the county and generation of a wealth of case studies documented from the ongoing projects that will create a rich repository of information to boost the practice of project management in the Kenyan public sector.







By **Dr Ann Sang**

THE JOURNEY TO ADOPTION OF THE TANYAI FOREST



In an endeavor to comply with the government directive Ref: OP/CAB.26.1.3A and Circular MOEST/10/6/Vol.11 dated 16th September 2019, DeKUT identified the Tanyai forest block (a Government Forest measuring 850 hectares of degraded forest as a result of Anthropogenic activities) that is part of the greater South Laikipia Forest Ecosystem, near Nairutia area in Nyeri County in line with the Ministry of Environment and Forestry Guidelines of July 2019. This will be a multi-faceted project where DeKUT will involve the local communities in tree planting, forest management, and community-based tourism projects and bee keeping for economic benefits to the Community. Wildlife from DeKUT conservancy will be translocated to Tanyai forest together with introductions of new species which have tourism attraction value.

GREENING OF DeKUT



In the past few years, DeKUT landscaping and beautification committee, using students and staff, have been involved in tree planting everyrainy season. And today, DeKUT has over 50% tree cover.

ADOPTION OF TANYAI FOREST

The journey for the adoption of Tanyai forest block started on 28th February when a consultative meeting was held between the management of Dedan Kimathi University of Technology (DeKUT) in Nyeri County and Kenya Forest Service (KFS) to design a partnership framework towards the adoption of Tanyai Forest block for restoration and rehabilitation.

The team was led by the Vice-Chancellor Prof. Eng Ndirangu Kioni and the Chief Conservator of Forests Mr. Julius Kamau. The meeting discussed the importance of creating synergies between the two institutions towards conservation and protection of the forest. KFS considered DeKUT, which sits between Mt. Kenya and Aberdares, as a strategic partner due to the Institution's proximity to Tanyai forest.

The CCF identified the DeKUT's technology advancement as an area that the two institutions would complimentarily benefit towards securing forests through the use of drones to support rangers manning the vast forest resources and also deployment of sensors for surveillance as well as for academic research.

Through the partnership, models of engaging communities in sustainable forest management will be developed such as the promotion of Community-Based tourism projects by the Institute of Tourism and Hospitality management as well as the value addition of income-generating activities, e.g., beekeeping, tour guiding and empowering the locals in tree nursery development.

The Institution will also put up a forest nurs-

ery with technical support from the Service that will aid in encouraging students totaling 8,000 to plant trees through an "adopt a Tree imitative, where every student will be encouraged to plant at least one tree every rainy season and take care of it during his degree study in DeKUT.

The CCF encouraged DeKUT to engage community scouts who will play a crucial role in protection (local community participation). The Institution has an operational wildlife conservancy of about 40 acres used for training students in Tourism and environmental conservation of flora and fauna. DeKUT has a mission of Greening the campus and today prides itself in having a Green University with over 50% tree cover over the last few years making the learning environment conducive and a healthy learning environment. This collaboration between the two organizations will contribute to achieving the 10% tree cover for the Country by 2022.



Aerial View of Tanyai Forest



Field Visit by DeKUT and KFS Team



Exit Photo after Consultative Meeting on Tanyai Forest

The Forest Adoption Framework was signed on 28th February 2021 and the implementation process has already begun. This is a milestone project which will develop a model for the restoration and rehabilitation of other degraded forests in Kenya.

By Prof Waweru

LEOPARD TORTOISE INCUBATION PROJECT AT DeKUT WILDLIFE CONSERVANCY

Classification:
Common Name: Leopard Tortoise
Scientific Name; *Stigmochelys pardalis*
Family Name: Testudinidae
Class: Reptilia
Order: Turtles

Background Information of the Project

Leopard Tortoise was introduced at DeKUT Wildlife Conservancy in the year 2012. Group structures of 2 males and four females. Since then, the tortoises have been laying eggs but no hatchlings recorded. This has been due to various parameters requirements for hatching that are not favorable in the Central region of Kenya, where the Conservancy is located. These conditions are:
Temperature; -Not below 26 degrees Celsius. Nyeri County, where the Conservancy is located, records an average temperature of 17.1 Degrees Celsius.

Eggs Safety: Female uses their hind leg to dig a hole to lay eggs. The hole is a hind leg size dip. After laying, it covers with soil. There exists Sykes Monkeys and various species of Mongoose that predate on the eggs.

Nesting Ground: The Conservancy has Black Cotton Soil. This type of soil is easily waterlogged during the rainy season, which results in the rotting of the eggs. During the dry season, it cracks and hence there is moisture loss, a vital requirement for eggs to hatch.

Humidity: During the incubation period, a balanced humidity level is required for eggs to hatch. This ranges from 40-70%. This relative humidity level is not met at the natural weather conditions of the Conservancy. Extremes of below 40% are realized, resulting in drying out of the eggs and above 70% during the rainy season, resulting in eggs rotting.



Steps approached in mitigating against the above challenges for successful hatching:
The first approach was monitoring when the tortoise lays eggs at the reptile park. Immediately a shelter was constructed. Out of clutch size of 12, there were no hatchlings recorded after 11-13 weeks, which is the incubation period with recommendable hatching conditions. It was concluded that the shelter kept away the predators, but other conditions could not be met.

The second approach was constructing an incubator using saw dust, 60wats bulb in boxes. A clutch of 42 eggs was incubated. There were no hatchlings. This was concluded that most probably, the proper humidity level was not realized.



The final and successful approach involved teams from Conservancy and Center for Data Science and Artificial Intelligence (DSAIL). The incubator this time is provided with a temperature by a 40 watts bulb, humidity by a bowl containing water. A thermo, as well as humidity censor, was installed by a team from DSAIL. A simple Minimum Viable Product (MVP) sensor is used in monitoring hatching conditions in the incubator. The sensor is integrated with an application using Wireless Fidelity (WI-FI) to visualize data in real time to help monitor and quick decision-making and make necessary adjustments of the parameters if need be. The eggs in the incubator are from various clutches. The very first clutch had three eggs that were in the improved incubator. Out of the 3, 2 hatchlings survived while one died inside the egg. The two survivors are secured in a cage of chicken wire to prevent predation and regularly fed with grass, cabbage leaves and water.

By David Muchiri - Conservancy Coordinator

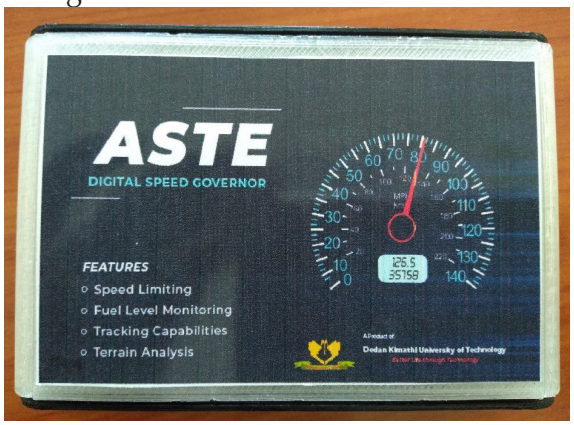
DeKUT TO COLLABORATE WITH ROAD SECTOR AGENCIES ON ROAD INFRASTRUCTURE DEVELOPMENT

Transportation comprises one of the key sectors of Kenya's economy, contributing between 5 and 15% of the country's GDP. Under this, the Roads Sub-sector accounts for about 80% of the country's total passenger and freight traffic. In the 2021/2022 budget estimates, 200 billion Kenya shillings has been allocated to the Roads Sub-sector, representing about 7% of the national budget. The importance of this sector cannot be overstated.

A colloquium held on Wednesday 3rd February 2021 between the Principal Secretary – State Department of Infrastructure, Chairmen of the Board of Directors of the Road Sector Agencies, Directors General of the Road Sector Agencies, Representatives and the Executive Committee of the Council of Deans and Principals of Engineering Schools and Colleges, has outlined the need for collaboration in road infrastructure development between universities and road agencies.

The meeting proposed the initial collaboration areas to include the following projects as quick-wins; Intelligent Traffic Management Systems, Development of Projects Management Dashboards, Capacity building for Project Management and fast-tracking the implementation of developed innovation and existing MoUs. The roads sector agencies in Kenya: Kenya Roads Board (KRB), Kenya Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA) have expressed their willingness to work with universities in conducting research targeting the unique challenges facing the Kenya roads sub-sector. Specifically, the state agencies have stated the need for local research on road materials, ITMS, development of local standards, structured training, process optimization, quality control during construction, automation, surveillance, Quality Assurance, among others. A coordination framework between the road agencies and universities is currently under development.

There have been concerted efforts at DeKUT to spearhead research and innovations in transportation engineering and take a proactive approach in fostering technology transfer in the same. A case in point is that of the DeKUT Centre for Development of Electronic Devices (CDED), which has already developed a road health monitoring system that makes use of sensors mounted on the underside of a vehicle to measure and report in real-time on the state of the road. The device nicknamed 'ASTE' comes as a multifunction unit with speed limiting, road health detection, tracking and fuel level monitoring capabilities. It is currently undergoing testing and approval by the relevant government agencies. This is just one of the interesting innovations available.



*An image of the **ASTE Digital Speed Governor***

The other innovation is the development of an Intelligent Traffic Management System (ITMS). This refers to a traffic light system that takes into account the prevailing traffic conditions in recalculating signal timings, as opposed to the current traffic lights that have to be programmed and reprogrammed manually as necessary. Further, the intelligent traffic lights coordinate with other traffic lights in the same road network for an optimal flow of traffic. This is achieved by integrating a number of telecommunications, information technology, and ultra-modern detection technologies.

DeKUT has enhanced its preparedness for the proposed Kenyan Road Infrastructure Development collaboration initiatives between the road agencies and universities by establishing a Centre for Transportation Research (CTR) at the university. This Centre of Excellence, to be domiciled at the Department of Civil Engineering, is envisaged to be the home of specialized training in transportation engineering, transportation consultancy, materials testing, and transportation advisory on transportation issues and projects. Another major objective of the CTR shall be to foster technology transfer for transportation-related research carried out at the university. The CTR shall adopt a multidisciplinary approach to transportation research and innovation to leverage the broad expertise available at the university. The Centre shall also offer various short courses to students, transportation practitioners and the general public on transport policy, public transport issues, road safety, infrastructure management, ITS and ITMS, among other emerging issues in Transportation.

Research and technology transfer in transportation engineering presents a unique opportunity for DeKUT to build up on its legacy of innovation and contribution to national development goals by "Bettering Life through Technology".

By, Martin Ngari.

DeKUT STUDENTS PARTICIPATE IN THE INTERVARSITY 2021 CTF COMPETITION HELD AT AFRALTI CENTER

On the 5th and 6th of March 2021, a team of three students from DeKUT were privileged to represent the University at Intervarsity 2021 CTF competition that was held at the Afralti Center, Nairobi. The competition brought together ten teams from different universities across the country who had earlier qualified at the semi-finals that were held on 12th and 13 Feb 2021. The Intervarsity 2021 CTF Competition aimed at bringing together college and university students passionate about cybersecurity in Kenya.

Members from each team had to combine their knowledge and skills to find flags then submit through the Cyberspace website profile to earn points. The challenges were designed from real-life systems and scenarios. By solving the challenges as a team, we gained much experience of what is expected from a cyber-security expert. The night was long with a lot of struggle and thinking trying to penetrate the virtual systems to find the flags designed for the competition, but at around midnight, we were able to find our first flag, which placed us at position 5 out of 10 on the leaderboard. The competition went on all night and ended in the morning.

The event ended with an awarding ceremony for the top 3 teams at the leaderboard and a closing speech by the guest speaker Madam Catherine Masinde from AFRALTI. She talked about the importance of practicing ethical cybersecurity activities on a professional level as well as doing certifications. She welcomed anyone who may be interested to book a chance at Cisco Kenya.
Although the night was long and cold, the experience gained was amazing as well as educational. Each member of the team had his most outstanding and memorable experience. The following quoted remarks were from each member of the team.

"Having a chance to participate as an individual and as a team representing the school was so much honor for me. The most incredible moment was meeting young students from different universities. We shared the same ambitions and dream of becoming a cyber-security expert and exercising it as a profession. The experience gained from solving the challenges was an enlightenment of what is expected from us in the industry. I also have to thank the University for their promise to cover transport and accommodation expenses."

~~JAMES GICHRI, team captain.

"We had two weeks to go for the finals at AFRALTI and we all knew that we had to do our level best. It was all about practicing our skills online on various platforms on the web for the next two weeks. We also occasionally met at the school and shared skills or ideas on resolving the security problems. The toughest challenge for me was in the reverse engineering category, namely: "magic". Having no experience in reverse engineering, I had no clue how to go about it. This has given me the motivation to explore it, and I have currently started by writing .asm code focusing on 86_64bit assembly. In the other fields also, I have delved deeper into them. I would like to thank the University for facilitating us with the opportunity to attend the event."

~~FESTUS GICHOHI, team member.

"For a first Live Capture the Flag event, we did great. Since the event will now be held annually, we are aiming to improve next year. We learnt a lot of skills and techniques and new ways to approach various challenges. The event was more than what we expected as we were spoilt for choice with delicious meals and lots of coffee throughout the night. We would like thank the school for financial support."

~~ ALLAN NJUGUNA, team member.

The experience as a team was amazing, as we had to work as a team. We shared experience and ideas and trained each other on various attacking vectors, exploiting handling and assessment techniques, and many more. We, alongside with Mr. Njihia, had a chance to have a chat with Ms. Catherine Masinde who is the Cisco Academy Support Administrator and Cisco Academy Instructor at African Advanced Level Telecommunications Institute (AFRALTI). She inspired us to continue working as a group and further form a cyber-security club at the university level.

DeKUT TEAM.

1. KENNETH NJIHIA –
Team patron from DeHUB
2. JAMES GICHIRI - C026-01-0322/2018
3. FESTUS GICHOHI - C026-01-0329/2018
4. ALLAN NJUGUNA - C025-01-1179/2019

By James Gichri

CENTRES AT DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

1. CENTRE FOR BIOMASS ENERGY STUDIES.

The Center for Biomass Energy Studies (CBES) is an autonomous, self-sustaining body under Dedan Kimathi University of Technology, GREEN Institute, established in October 2019.

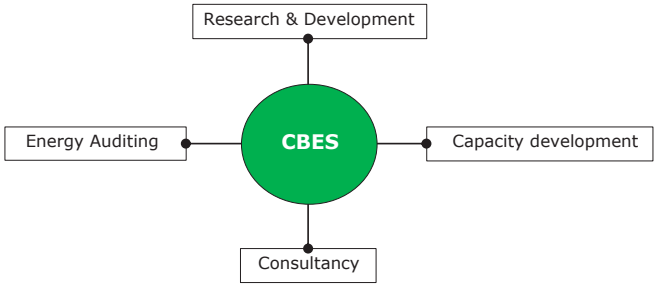


Figure 7 CBES mandate

CBES mandate/focus includes but not limited to research and consultancy work in:

i. Sustainable Biomass Production
ii. Sustainable Bioenergy Systems (SBES)
iii. Bioenergy Conversation Technologies
iv. Biomass-Based Thermal Energy Systems
v. Biomass-Solar Thermal Hybrid Systems
vi. Energy Management/Energy Efficiency
vii. Energy Auditing

As far as research is concerned, CBES specializes in research and development (R & R&D) in biomass biochemical conversion technologies, biomass thermal-chemical conversion technologies, biomass-based chemical production technologies, waste treatment technologies/circular production/economy and bioenergy with carbon capture and storage (BECCS) technologies.
Key research focus areas include biodiesel, fuel ethanol, biomass pyrolysis and gasification, biomass gasification and power generation, synthesized fuels, municipal solid waste

(MSW) treatment, and utilization.
Besides research and development, the centre also carries out projects in:

- Capacity development through approved and accredited technical and professional education and skills training, seminars, workshops, and conferences
- Biomass fuels strategy (sustainably man aged woodlands, sustainable consump tion) development and implementation
- Biomass-based thermal (steam, hot water, hot air) energy systems design, simulation, performance audit and optimization, inspection, and certification, amongst other services.
- Biomass resources mapping and potential evaluation
- Biomass projects carbon offset assessment
- Policy, legal and regulatory support on bio mass fuel projects





- Knowledge management and aware ness-raising amongst stakeholders
- Investment and business promotion along biomass energy value chain
- Green economy advancement.

In the academic year 2020/2021, the centre with financial support from GIZ innovations funding, supported three final year projects in the Department of Mechanical Engineering. The three projects were: Solar Crops drier, Solar Cooler and Clay Pulverizing Machine.

Being the anchor Centre of the GREEN Institute, it carries the institute's mandate and offers services covering all energy sources, energy efficiency/energy management, and other sustainability projects.

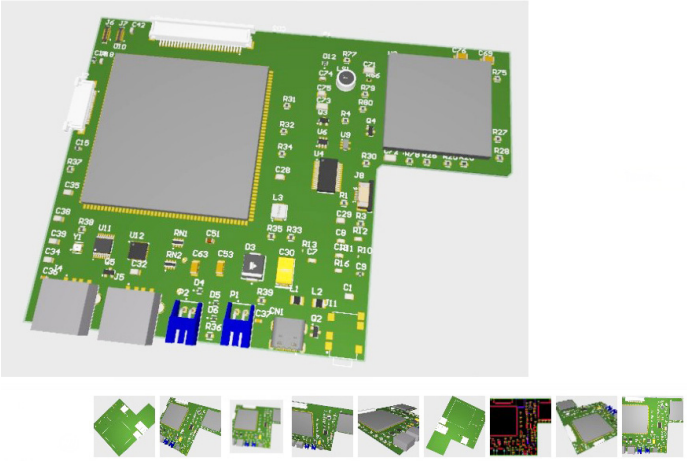
Projects

The table below presents potential projects that CBES will engage in/implement from 2020 to 2024.
In the academic year 2020/2021, the centre with financial support from GIZ innovations funding, supported three final year projects in the Department of Mechanical Engineering. The three projects were: Solar Crops drier, Solar Cooler and Clay Pulverizing Machine.

PROJECTS	Year 1 2020	Year 2 2021	Year 3 2022	Year 4 2023	Year 5 2024
1. Continuous Professional Development (CPD) trainings in renewable energy use/integration and energy efficiency					
2. Water and Energy for Food (WE4F) project (GIZ-Kenya)					
3. Energy and water use mapping in various productive sectors					
4. Coo☐ ☐tove Project (GI-ZEnDE☐)					
☐. Promotion of Climate Friendly Coo☐ing in Kenya (GIZ-EnDE☐)					
☐. ☐peciali☐ed laboratories establis☐ment					
☐. Pilot researc☐ and training biogas plant					
☐. Pilot researc☐ and training biomass pretreatment plant					
☐. Pilot researc☐ and trainingGasification ☐ Cogeneration plant					
1☐Establis☐ment of a pilot ☐iorefinery					
11.Decarboni☐ation projects in t☐e agro processing industry					

By, Eng. P.M Kimari
Director, CBE

2. CENTRE FOR DEVELOPMENT OF ELECTRONIC DEVICE



DLD motherboard designed at CDED

There are also several other electronic devices that will be assembled at the plant. Key among them is the DeKUT, 'ASTE' digital speed governor. The design of this device has already been done and its currently undergoing testing for purposes of approval and licencing by the relevant government agencies. Once the licence is issued, mass production of the ASTE speed governors will start at the assembly line.

The establishment of the DeKUT Science and Technology Park has brought in insurmountable opportunities and facilities that the University can leverage on to develop electronic products locally as opposed to the traditional way of producing the products abroad. One of the facilities established at the STP is the electronic devices assembly plant.

In order to tap into these opportunities, DeKUT established the Centre for Development of Electronic Devices (CDED), headed by Mr. Julius Karanja who spearheads the development of innovative electronic devices in order to

provide solutions to various societal problems. To date, the assembly line has been set up and there are a number of devices that have been earmarked for production on this plant.

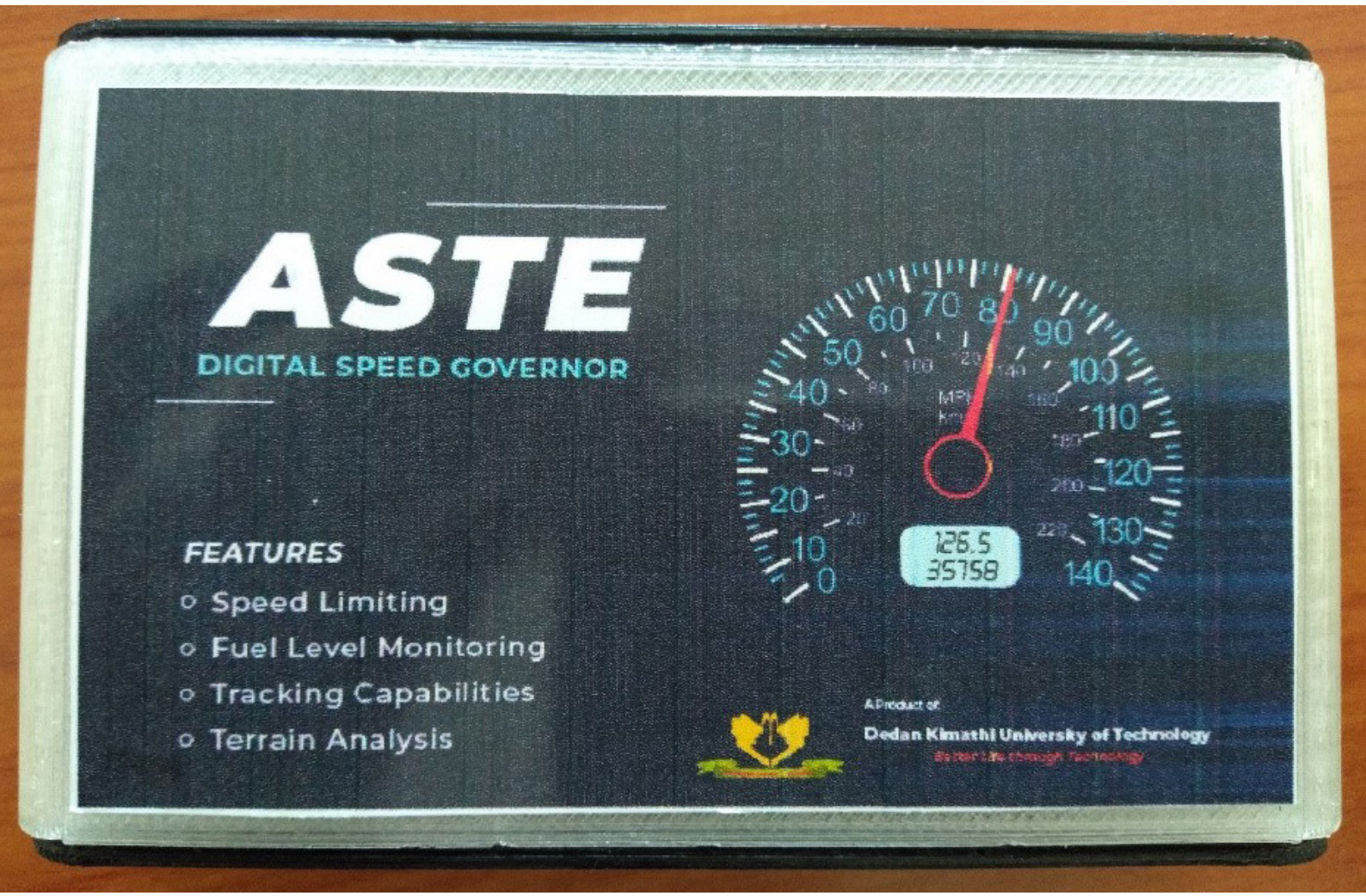


A view of the electronic devices assembly line

One key product is the Digital Learning Device (DLD). This is a computing device to provide access to education materials by all learners countrywide beyond the traditional classroom environment.

This project is being undertaken together with a number of collaborators. These include Intel corporation, Asytec Kenya limited and Semiconductor Technologies limited. There are also several stakeholders involved, including the ICT Authority (ICTA), Ministry of Education (MoE) and Kenya Institute of Curriculum Development (KICD).

In this project, DeKUT is designing the Digital learning devices for the various levels of learners with the support of the Intel team. Already a prototype has been developed and is currently undergoing testing and review. Once the design is complete, the production process will start at the newly install DeKUT assembly line. This will guarantee a 100% design and production of the devices locally.



DeKUT Digital speed governor

Another product that has been earmarked for production on the assembly line are digital smart water meters. Several stakeholders in the water services sector have expressed interest to partner with the CDED to develop and pilot the concept of smart water meters. It is projected that about

40,000 smart water meters will be produced annually once the design and piloting is done.

By Julius Karanja

Other Centres include:

1. Siemens
2 Centre for innovation & Entrepreneurship management
3. Centre for Geotechnical Engineering
4. Centre for Industrial Productivity & Engineering
5. Data Science Artificial Intelligence
6. Centre for Data Research and & Cyber Security
7. Software Development Centre
8. Centre for Economic Policy Technology Development Studies
9. Centre for Nano Materials & Nano Science Research
10. Centre for Coffee Technology
11. Centre for Food Safety
12. Centre for Water Resources Management
13. Centre for Excellence in Competence Based Education & Training
14. Centre for Excellence in Teaching & learning in Higher Education

NATURAL COFFEE FLAVOURED YOGHURT SCALE UP: PARTNERSHIP BETWEEN DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY AND MUKURWE-INI WAKULIMA DAIRY LTD

The dairy sector in Kenya is currently facing a myriad of challenges including poor income for farmers due to limited value addition opportunities. On the other hand, there is an increased consumer demand for natural, healthy and nutritious food products such as yoghurt due to the rapid emergence of non-communicable diet-related diseases. Yoghurt is a highly nutritious and easily digestible dairy product. It is a rich source of protein, minerals and vitamins and has been shown to contribute to improved gut health and immune system.

The growing competition and consumer awareness on healthy and natural food products has led to the increased research and innovations on foods with highest quality that meets customer expectations in terms of nutritional and flavour properties. Dedan Kimathi University of Technology (DeKUT) has partnered with the Mukurwe-ini Wakulima Dairy Ltd (MWDL) to provide demand-driven solutions in the dairy processing technologies through joint research and development initiatives. DeKUT is endowed with over 280 acres of coffee and is involved in research and innovations of novel dairy and coffee value addition technologies, and their transfer to the industry and the community. Innovators at Institute of Food Bioresources Technology (IFBT) of DeKUT developed and patented a novel premium quality natural coffee flavoured yoghurt using modified extraction technologies. Specifically, the invention relates production of yoghurt with a unique chocolaty candy like aroma and a sweet, long pleasant aftertaste. The current innovation of natural coffee flavoured yoghurt not only enhances the flavor of yoghurt towards increased consumer acceptability of yoghurt, but it also improves its functionality from improved antioxidative properties.

As a demonstration of University-industry partnership in resolving a local challenge, DeKUT signed a license agreement with MWDL towards industrial scale production and marketing of natural coffee flavoured yoghurt in the supermarkets and other retail outlets across the country. This unique University-industry partnership between DeKUT and MWDL comes at an appropriate time when new policies aimed at promoting value addition of dairy and coffee value chains towards improved food security and farmer incomes are being developed at the level of county governments.

The MWDL was started in 1990 as self-help group with the main objective of collecting members milk and marketing it to the milk processors. Currently, the dairy collects and processes 50,000 liters of milk daily and plans to increase to 80,000 liters as per its five -year strategic plan. The partnership between DeKUT and MWDL will strengthen the continued growth of the organization in line with the vision of improving the livelihood of members and reduction of poverty in areas of operation by helping farmers to increase milk production and improve the quality.

The joint launch of the natural coffee flavoured yoghurt by DeKUT and MWDL is a clear commitment of both organizations working together towards providing emerging consumer solutions with respect to demand for safe, healthy and nat-

ural-flavoured dairy products. The partnership guarantees the best natural coffee flavoured yoghurt of highest quality that exceeds the customer expectations. Besides contributing to the availability of healthy and acceptable coffee flavoured yoghurt, this innovation is expected to catalyze the involvement of more actors in the dairy and coffee value chain, thus contributing to improved food security and livelihood, especially among the small-scale dairy and coffee farmers.



Director, IFBT, Dr. Eddy Owaga explaining the innovation process of the natural coffee flavoured yoghurt at the DeKUT Coffee Quality Laboratory (Photo credit: Tony Maundu)



Signing of license agreement by DeKUT Vice Chancellor, Prof. Ndirangu Kioni and MWDL Chairman Muhika Mutahi as witnessed by Managing Director DeKUTES, Dr Paul Sang (Photo credit: Risper Thuku)





By Dr. Eddy Owaga,
Director Institute of Food Bioresources Technology

SCALING CHIA INNOVATION THROUGH COMMERCIALIZATION FOR SUSTAINABLE FOOD SYSTEM TRANSFORMATION



The high malnutrition rate in Kenya is a serious public health problem that requires urgent attention from all sectors. Provision of nutritious food should be addressed across the food chain by introducing novel crops that easily adapt locally and can be grown with the existing ones, like Chia that can be an alternative to maize farming to enhance nutrition and supply. Chia is more suitable in the food industry due to its important physiochemical and functional properties. It is an excellent agent in food thickening, gel formation, chelator, foam enhancement, emulsification, suspension formation, clarifying agent, and rehydrating agent. This makes it commercially viable for the development of new products enriched with omega-3, protein, dietary fiber and phenolic compounds. Research has shown that, chia seeds are also beneficial to animal feeds, where their addition resulted in a rise of alpha-linolenic acid (ALA) and a reduction of cholesterol levels in eggs and meat.

Chia (Salvia hispanica L.) is an exotic plant in Kenya where the effects of new growing environments and agronomical treatments on seed quality has is being exploited. It has a promising future for food security, improved nutrition and health.

DeKUT Chia Project "The Potential of Chia (Salvia hispanica L.) Farming in Kenya for Improved Food Security, Nutrition and Health".

Funded by the National Research Fund, Kenya. Through the coordination of Dr. Monica Mburu, a Senior Lecturer and Researcher in the Institute of Food Bioresources Technology (IFBT), the project has been contributing to DeKUT's

vision of leading innovation and sustainable development in agriculture through food science and technology. The project has established a chia demonstration farm for stakeholders training and seeds production for use in research. Dr. Monica Mburu has far-reaching experience in chia research, where she is currently promoting chia cultivation with small holder farmers of Nyeri County for value addition and product development.



Figure 1: Chia Demo plots at Wambugu ATC (Exhibition Held virtually July 26th – 27th, 2020)

A. Chia project Community engagements

1. Capacity building of Agricultural Extension Officers in Nyeri county

The project has trained Agricultural extension officers in Nyeri County on Chia agronomical practices, chia processing, marketing and consumption. Through these officers, chia research output is disseminated to small scale farmers in the region.



Figure 2: Training Agriculture Extension Officers, Nyeri County (September 18th 2020)

2. Capacity building of Small Holder Farmers in Nyeri county

The chia project, in conjunction with the Directorate of Agriculture County Government of Nyeri sensitized the farmers on chia (Salvia hispanica L.) cultivation to manage household nutrition and health and boost food security among small holder farmers in Kenya (Nyeri County). This was done in 2 phases. Phase 1 in Kieni Sub County and Phase 2 in high potential areas.



Figure 3: Capacity Building at the DEKUT Chia Demo Farm – Phase I Lead farmers from Kieni Sub-County (February 18th, 2021)



Figure 4: Capacity Building for small holder farmers in Phase II Lead farmers from Nyeri County (February 26th 2021)

B. Chia Project Products Development

Various products have been developed from chia leaves and the chia seeds other than just the consumption of the leaves as fresh vegetables and the chia seeds in seed form. These products include:

- Chia seeds drink- Obtained by adding hot water to clean chia seeds and allowing them to settle for a few minutes forming a thick mucilage. The sweetening of the chia seeds drink is optional.
- Chia dried vegetables- These have been dried to increase their shelf life.
- Chia herbal tea- Chia leaves are dried and ground to obtain chia herbal tea
- Chia powder- Chia leaves are dried and milled into a fine powder to be sprinkled on food.
- Chia honey spread- Made purely from honey and ground chia seeds.
- Chia snack bar- Snack bar from purely chia seeds.
- Chia encapsulated oil- Under research to de termine the stability of chia oil under various storage conditions.
- Chia supplemented yoghurt- Yoghurt using chia seeds as a stabilizer.
- Chia stalk powder- Obtained from the dry chia stalk after Chia has been harvested and can be used for animal feeds.
- Maize chia cake- Cake made from maize flour and enriched with chia seeds



Figure 5: Exhibition of Chia supplemented products at Central Kenya National Show in Nyeri (September 11th – 14th, 2019)

Conclusion

In Kenya, the performance of the agricultural sector bears a huge impact on the functioning of the overall economy. It is a critical component for both rural development and poverty reduction. Provision of nutritious food should be addressed across the food chain by introducing exotic crops that easily adapt locally and can be grown with the existing ones. Chia is one of such crops that can enhance the nutrition status of food crop and fit in mixed cropping locally.

At DeKUT, we research the best agronomic practices of Chia, enhance value addition of Chia through product development, and disseminate the information to the public through publications, conferences, and training in collaboration with other relevant government agencies.

By **Dr Monica Mburu**

PHILOSOPHICAL THINKING IN A TECHNOLOGICAL WORLD

"I have been teaching philosophy and other related units at the university level for over thirty years. I have also been giving seminars on ethics, governance and leadership over the same period of time. Anytime I have introduced myself and my academic backgrounds, a number of people including university dons, do ask me to spell out the meaning of philosophical thinking and its significance in society. One would be interested to know that human activities are philosophically inclined whether one is a trained philosopher or not. This is because human mind is inclined to think and ask questions pertaining to life. The distinction is at the level of asking, posing and responding to issues raised. While non-philosophers will have a popular way of responding to issues, a trained philosopher will have an analytical, non-contradictory, clear and issue-related answers to whatever question/issue raised. Hence the difference is sorted out through what we refer to "the popular sense" and "the academic sense" of philosophy. It is the latter that this article addresses with the aim of concluding that, even the technological world requires people possessing philosophical thinking. This is because, philosophy is an activity of the mind, and intellectual enterprise that challenges one to think and produce knowledge for the betterment of humanity of which the technological world cannot ignore.

Science of the mind

It should be noted that, philosophy is a science of the mind and it cuts across all academic disciplines. It is a philosophical mind that makes one to wonder, doubt, become inquisitive, and eventually innovative and creative in all areas affecting humanity including and not limited to; environment, engineering, business, medicine, technology, politics, universe as well as arts and that which influence or affects human behaviour. It is philosophical thinking that makes one to be evaluative, analytical and strategic in desiring the required goals leading into a mission that is visionary in nature. The world of technology cannot exist without this "science of the mind."

Globally and in every institution of learning and regardless of its status there must be elements of philosophy. This is true because philosophy touches so many subjects and, its methods can be used in any field including that of technology. The study of philosophy helps human beings to enhance and possess the ability to solve problems, their communication skills, their persuasive powers, and their writing skills. In essence, there are philosophical elements in every subject one engages in-mathematics particularly in algebra or calculus (symbolic logic), music and arts (aesthetics), biological and human behaviours (ethics), education (epistemology and the order of things/being (metaphysics). Hence, there is no one academic discipline that does not employ philosophical thinking in the process of attaining its goals and objectives. An engineer in nanotechnology requires a philosophical mind to make things work. A medical doctor working in the laboratory developing a particular vaccine, will require to be methodical in analyzing the required doses-this is all philosophical in nature. Even when one discusses time, microcosms, fluid mechanics as well as food science, chemistry, business studies, entrepreneurship, ICT and computer science philosophical thinking must be applied. But why philosophical thinking in areas that appear so technical and practical in nature?

Necessary skills

The skills that one needs in order to be able to think critically are varied and include observation, analysis, interpretation, reflection, evaluation, inference, explanation, problem solving, and decision making. Thinking clearly and systematically can improve the way one expresses ideas. In learning how to analyze the logical structure of texts, philosophical and critical thinking improves comprehension abilities and give impetus to self-reflection and provide the tools for self-evaluation. Through philosophy, one can ensure that academic knowledge is retained in every level of academic participation including in submitted assignments and passing competently in all examined areas even those from a technological examination. It is through philosophical thinking that students are also able to develop a sense of personal humane values and ethics thus providing a better upbringing for them to cope in the later years of their life even when they get employed or become job-creators in their respective countries. This is because philosophical thinking helps on solve problems -mundane or abstract, and it helps one make better decisions by developing his/her critical thinking which assists one to reflect, analyze the reality, acquire and filter through available information. It also assists one to be good in arguments structuring, creative in generating ideas and making proper decision for an organization. Though philosophical thinking assists in making one a good debater, it also enables one to be committed, responsible and accountable to any situation in life including combating crime and corruption in and around any jurisdiction including the technological world.

Conclusively, philosophical studies culminating in critical thinking is therefore the "key thing" that must drive all units offered at Dedan Kimathi University of Technology and whose motto philosophically states "Better Life through Technology". This better life can only occur when one is grounded in philosophical thinking. Like Socrates would put it, "unexamined Life is not worthy living". It is the same with students either from Business, Engineering or Science schools, without studying IGS 1104: Introduction to Philosophy and Critical Thinking offered here at DeKUT, if this foundational unit lacks, then, all other units become blur including those offered from a technological perspective."

By Prof. Theuri Matthew M., PhD
(Director, Institute of General Studies)

FOOD FOR THOUGHT:
EDUCATION NEEDS TO MEAN MORE



One of the greatest African leaders and a leader of the world, the late Nelson Mandela, said that Education is the most powerful weapon which we can use to change the world. We further know that education has the potential of being the key to eliminating gender inequality, to reducing poverty, to creating a sustainable planet, to preventing needless deaths and illness, and to fostering peace. With all this knowledge however, there is little transformation yet there are schools all over the world. This leads me to the question, are we getting education right?

There are different definitions of education but

for the purposes of this article, I will use two definitions: According to Aristotle, education is the process of training man to fulfill his aim by exercising all his faculties to the fullest extent as a member of the society. The Oxford Dictionary on the other hand defines education as a process of teaching, training and learning, especially in schools, colleges or universities, to improve knowledge and develop skills. With all honesty, when you read the two definitions and look at our education system (here in Kenya and beyond), what form of education are we practicing? Are we training and getting trained to exercise our faculties to the fullest extent as members of the society or are we simply training and being trained to acquire knowledge and skills that do not translate to the improvement of our society? In my view, we seem to be doing more of the latter.

In my observation, we have made education more about academics and not molding and transformation of the minds and hearts of the learners to be empowered and also inspired to make a difference in whatever capacity and whatever level. Going through education is becoming more and more like a check list that we need to mark: Primary Education, check; Secondary Education; check; Tertiary Education;

check and so on and so forth. We use the level of education of individuals to measure their quality regardless of whether or not the said education is translating to any value in the society; to the said fulfillment of one's aim by exercising all their faculties to the fullest extent as members of the society. What then do we need to do differently?

I don't know if I am the only one feeling this but I think we are lacking the aspect of transformation of the minds through the right kind of education. I think it's time we looked within ourselves as individuals, as trainers and educationists as well as a society and asked ourselves how we can make education mean more.

By Wanjiru Kaburu

WHO AUDITS THE INTERNAL AUDITORS?

Internal auditing is conducted in diverse environments within organizations that vary in purpose, size, complexity and structure; and by the persons within the organization. Dedan Kimathi University of Technology's Audit Compliance and Risk department is established under DeKUT Statute XV of 2013 and in accordance with the Public Finance Management Act, 2012 and Public Finance Management (National Government) Regulations, 2015.

The department undertakes its activities using a risk-based approach guided by International Standards for the Professional Practice of Internal Auditing. The structure of the Standards is divided between Attribute and Performance Standards, both of which must apply to all internal audit services.

Attribute Standards address the attributes of organizations and individuals performing internal auditing, while the Performance Standards describe the nature of internal auditing and provide quality criteria against which the performance of auditing services can be measured. The Performance Standards also provide that the internal audit activity must be independent.

Independence is the freedom from conditions that threaten the ability of the internal audit activity to carry out internal audit responsibilities in an unbiased manner. To achieve the degree of independence necessary to effectively carry out the responsibilities of the internal

audit activity, the chief audit executive has direct and unrestricted access to senior management and the board. This can be achieved through a dual reporting relationship. i.e. functionally to the Audit Committee and administratively to the CEO. Threats to independence must be managed at the individual auditor, engagement, functional, and organizational levels.

The above framework then evokes this question: "Who audits internal auditors?" Respondents usually give a variety of answers ranging from "no one" to "the Audit Committee"! Whereas internal audit activity is not subject to audit in the same way other institutional business units and processes are, there are ways management can get reasonable assurance that the internal audit function is robust enough to do what it is supposed to do.

International Standards for the Professional Practice of Internal Auditing have a way to keep internal auditors in check. Institute of Internal Auditors (IIA) Standard1300 requires the chief audit executive to develop and maintain a quality assurance and improvement program that covers all aspects of the internal audit activity. Such a program is designed to enable an evaluation of the internal audit activity's conformance with the definition of Internal Auditing and the Standards and an evaluation of whether internal auditors apply the Code of Ethics. The program also assesses the efficiency and effectiveness of the internal audit activity and identifies opportunities for improvement.

One of the methods to assess internal auditors is through Internal Quality Assessments. IIA Standard1311 stipulates that internal assessments must include day to day monitoring of performance of the internal audit activity as incorporated into routine policies and practices used to manage the internal audit activity.

Internal assessments must also include Periodic self-assessments or assessments by other persons within the organization with sufficient knowledge of internal audit practice.

Another way of evaluating internal auditors is through External Quality Assessment. IIA Standard1312 requires External Assessment to be conducted at least once every five years by a qualified, independent assessor or assessment team from outside the organization. The chief audit executive must discuss with the board the form and frequency of external assessment, and the qualification and independence of the external assessor or assessment team, including any potential conflict of interest. The Standard explains that external assessment can be in the form of a full external assessment, or a self -assessment with independent external validation.

To ensure that DeKUT's internal audit function is performing in conformity with the IIA Standards, we subject our activities to Internal Quality Assessment through Customer Feedback Surveys completed by Auditees as well the Annual External Assessment by external auditors from the Office of the Auditor General (OAG). Now you know.

By CPA James Muthusi
Head, Department of Audit, Compliance & Risk



PROMOTING GENDER, DISABILITY AND EQUITY AFFAIRS AT DeKUT

DeKUT, in its commitment to mainstream gender, disability and equity affairs, has tasked the Directorate of GD&EA to come up with initiatives to ensure that mainstreaming of these dockets happens.

The directorate achieves this by supporting students who are parenting, students and staff members with disabilities, creating awareness and sensitizing the DeKUT community on Gender and Disability issues. The Office of the Director of Gender, Disability and Equity Affairs works closely with the Gender Mainstreaming Committee and the Disability Mainstreaming Committee.

Over the past years, the directorate has been managing a daycare near the University for student mothers to leave their babies at a subsidized fee. The directorate supports the student mothers in various ways such as linking them with other services within and outside the University. Some of these services include; counselling, mentorship, support group and access to donated clothes for their babies.

The directorate is also committed to mainstreaming gender and disability by sensitization. The directorate has been committed to giving regular training about these topics. The directorate has often trained students and staff members on gender and disability issues in forums like “Empowered moms”, Anti-Gender Based Violence training, Disability Sensitization Training and others.

In partnership with other departments and directorates, the Directorate of Gender, Disability and Equity Affairs has supported the Persons with Disabilities in DeKUT with; internal accommodation for the students with disabilities, transport within the University for Persons with Mobility Disabilities, running support groups for students in similar situations and ensuring

that Persons with Disabilities are involved in co-curricular activities.







By Dr Esther Nthwiga

MY EXPERIENCE AT DeKUT

Dedan Kimathi University of Technology is a very popular University in Kenya. No matter how people view it, comrades recognize it as the "University of California, Nyeri Branch". Other stakeholders have also been suggesting that it should be named 'Wangari Maathai University of Technology' because of its serene learning and working environment. The University's name has also been trending positively on the social media platforms with most people terming it as 'Harvard University Nyeri branch'.



All this positivity is through the experience students have in this University. As the saying goes, "ngumo ndiigana mwene" popularity of this University landed on everybody's ears since students expressed the good, they saw in the University, both curricular and non-curricular activities.

After interacting with my fellow students, they all had the same question on how they found themselves in this institution. Everybody claimed to have selected other universities and while ending the selection they finalized it with Dedan Kimathi University of Technology. By good or bad luck, they found that the last University selected was the one KUCCPS placed them. This makes them doubt the relationship between the University and KUCCPS.

Being called in this institution attracted different views from my friends and relatives. Some said that I had wasted a golden opportunity to go to what they used to say "Big Universities". This phrase, "Big Universities", till today runs in my mind. It was a very confusing moment which made me look for a friend from the "Big Universities" and when I told him about the discouragement I was getting from villagers, he told me that those are the rumors given by cowards who have no idea on the way forward. He appreciated and wished that he would have chosen the University due to its timely completion of studies. He then went ahead and explained to me a problem that he had encountered with his University. "The course I'm undertaking is a four-year course but I'm on my sixth year and still not completed." He added. Only that little encouragement made me avoid listening to the unnecessary rumors.

On arriving at the University, from a distant point of view, everyone was confused as the picture that was on every person's mind was totally different from what the eyes were witnessing. The pictures posted on Universities website rolled in my mind in a slide show mode. On entering, everybody doubted whether he/she was in the right place as it seemed

a bit different. Everybody enjoyed those buildings and took not less than 10 photos. Later we came to appreciate the natural environment in the school as there was a serene environment to comfort one after lectures.

Students take advantage of the University's serene environment in different ways. Some take it as a good scenery to take photos and videos. It's interesting to find some students taking a challenge that has not been done before. They challenge each other to name different types of trees around the University in their local language. This is a very enlightening and joyous challenge.
Online teaching is the new normal which has been embraced by most of the lecturers at the University. Every student will remember that this mode of teaching broke the boredom at home after closure of all academic institutions in 2020 due to the COVID-19 pandemic. This was amongst the first universities to start online studies as well as hold a virtual graduation. It was a great pleasure learning online as one seemed to be special in the family. You could frequently hear parents bragging in the village about how their children don't like wasting time. The comfort was to the students because they had escaped from doing the home chores especially going to the shamba.

Though it was a cheap way of learning, some parents did not understand this as they recognized it as a way of escaping work at home. Some would even say that one is supposed to learn after work. It is this problem and many others that led to the emergence of group B amongst our first years. It is a group that had no idea of online learning.

University being divided into different schools is a nice way to approach it. It is good that these schools are situated at a long distance from each other because individuals in these schools are different. Meet students at the School of Business where you will recognize every type of fashion that has come out. These guys have no interest in staying and wandering around the school, so they always look like strangers every time. On the other side of the school, meet the "workers of the university" as the nickname of individuals at the School of Engineering. These individuals walk around the school with a lot of confidence with long T-rulers and heavy boot shoes. They have no fashion as they are restricted to stay with aprons. The schools at the Resource Centre have students who coincidentally look like lecturers. That is the only place you will confuse a student and a lecturer, something which has continued to be a paradox. WIFI is all over the school but these guys know all the places where it is very strong. They venture all over the University without being asked any question.

If written, the pride of being in Dedan Kimathi University of Technology can fill many books that can be termed as an exaggeration. Only those who have passed through it can tell the sweet or the sour of the school. From the words of many, it is a very recommendable university that is very accommodative for one interested in education and those good at co-curricular activities.

By Haron Mburu

Higher learning was a dream far like a moon. However, learning internationally changes moods, from being comfortable in my usual cultural norms to comforts of difference, appreciating the cultural difference even in the region and affirming the strength in differences leading to integration to the regional greatness. Eager to grow professionally, we study. Eager to serve better, we learn.

Crossing the borders is not in vain; we get exposed to different cultures, whether at school or in the host community. From new languages through lifestyle, we learn. I remember debating the importance of having Swahili as a lingua franca for the East African Community. I never thought it was a challenge that I would have to face. But I got to acknowledge the importance of language which connects people. Then coming to DeKUT for higher learning became my opportunity to learn it.

Being at the University of Technology is the best way to ensure that the academic experience will be great. Here, learning by updated techniques. Lectures, assignment, discussions or presentation are all to germinate a huge range of skills and knowledge. I can confidently say that my confidence has gone far up. "Practice makes perfect" we get time to practice in laboratories and enlarge our understanding through field visits.

With these participatory lecturing techniques, one grows in many ways. My English proficiency increased and I learnt to search for widening my understanding. The academic environment allows one to learn from the best. Swahili has been a bit of a challenge, but I got to improve slowly with people who encourage, understand, and help.

Academicians working for the solutions of the communities are the kind of people one meets at DeKUT. Their love of research and solution finds is so contagious. Specifically in the IFBT, a lot of research has been undertaken on chia, coffee, dairies and more. The school offers a unique chance of being competitive in future careers.

With the desire to gain knowledge, DeKUT is the great University to head to. Technology is the biggest focus—technology in lecturing and learning. I used to get materials from the e-learning platform and the library but when COVID19 hit, it was amazing to continue programs on online platforms like KENNET and lose neither time nor hope.

With experienced and warm-hearted lecturers, studying is at ease and forges the future. The environment is green, the breeze in the gardens. I particularly love the rosemary and jacaranda in the hero's garden. The jacaranda is ever purple, and its shade is recreating. Facing either Mount Kenya or Nyeri Hill, one enjoys the peaceful breeze. The climate is good for the mind.

Socializing is another aspect of the school (though, with the pandemic it was no longer possible). Excursions like Nyeri Hill hiking and visiting the conservancy was great. Sport, religion and entertainment are plenty. The community is welcoming and I particularly enjoyed attending a cultural wedding and dinner (invited by a family we met at church). But I still miss cultural events and integration opportunities. Thank you DeKUT for this great opportunity.

By Lys Irakoze – MSc Food Science and Technology, EAC-KFW scholarship



The day was 10th August 2016, when KUCCPS declared my enrolment course would be Business Management, somewhere in the Western woods. It was one month to joining the university, and unlike my peers, I was stranded. My dream for medicine and surgery had been suffocated to death when I sat for my KCSE. I was lost in thoughts, stuck and overflowing. A week later, my brother and my role model asked me to look into nursing careers. Blame me not, for at that age, I had never thought of Nursing as a career. Days later, I was booked for a prior induction by a lecturer in the Nursing department in DeKUT. This was the birth of my love for Nursing.

Besides the late hours in the library, books the size of a log and lectures full of jargon, my greatest fear was to fail to make it through nursing school. With the statistics at hand and the KCSE grades of my new classmates, my chances to make it to the graduation list were close to below average. I'm currently sitting as the Youths head of Health, PWDs and Informal settlers in Nyeri Town Constituency courtesy of DeKUT management and the Nursing Department.

I was capacitated to serve in various leadership positions, including appointments to initiate Kenya Student and Novice Nurses branch of NNAK for the first time. DeKUT, through the student's welfare, facilitated and supported most of my programs which were sometimes shoddy. Such include the annual medical camps for the students, the regular blood donation camps, and medical camps organized within Nyeri. The same office always asked for my hand to attend to our young mothers to be admitted, attended to, and waived at the Nyeri CTRH.

The Peer Counsellors Program initiated by the Student Counselling Department was my greatest resource. I not only trained as a one, but also led the most active, responsive, skilled and vibrant cohort. The cohort was a benchmark to several colleges and universities in Kenya. This was an achievement towards ending mental health stigma and dismantling barriers to seeking help.

What then would I say of DeKUT Nursing Department?

Besides offering the cheapest direct entry and upgrading programs, the course is highly built on professionalism with a goal of producing nothing but the best nurses. Despite being young in the profession, I have received high regards from potential employers just by mentioning my training institution. Its specialized and competent trainers are the reason for my passion in Mental Health Nursing, to respond to the unending global challenge of rising suicide and mental illnesses. There's no health without mental health.

By Amos Kigiri

THE SPIRIT OF DEDAN KIMATHI

One time, Dr. Ann Sang, the then Chair of The Department of Accounting and Finance and my lecturer for Organizational Behavior, gave my class an assignment asking us to write about the artifacts found in Dedan Kimathi University of Technology. I liked that assignment mostly because it was fun to do but also because it made me think deeply about the effect of what I look at everyday has on my way of thinking and behaving.

In my assignment, I wrote about the name of our University, the masts of The Late Dedan Kimathi and Nelson Mandela that are in front of the University's Resource Centre, The Freedom Hall, The Heroes Garden, The Shrine of Sr. Irene Stephanie Nyaatha and the stone inscribed with the words of H.E. Thabo Mbeki. I wrote about how I think the names given to these places, buildings, and artifacts define us as a Dedan Kimathi University of Technology community. As a freshman in DeKUT, you will hear about The Freedom Hall, and think, which freedom? Well, I think it celebrates our freedom fighters. As a young Kenyan, that reminds me of what it took for me to live in the country I do now. Where I can freely go to class, receive an education and become a productive member of society.

When you first see the masts of Dedan Kimathi and Nelson Mandela, you take a selfie, and while you do, you think about the work they put into Africa. How they drew strength from each other in fighting for the freedom of their countries. It reminds you that when their names are mentioned worldwide, people think of these things; sacrifice and service. When you tell your friends on FaceBook about your University's name, it is about a great man who lost his life for our great country.

The Shrine of Sr. Irene Nyaatha is in Heroes Garden. The name of the Catholic Nun that lived many years ago, Nyaatha, literally means 'One with Mercy'. When you listen to stories of her life and what she did in her community, you are intrigued. You start thinking about what you can do for your community. The Heroes Garden gives you a chance to pick a hero you'd want to celebrate. So, as you sit with friends for a group discussion, you can talk about how they inspire you. You might even share a snack under the trees enjoying the cool fresh air cascading from the slopes of Mt. Kenya. And as you leave the garden, you will see a stone with the words H.E. Thabo Mbeki said 'I am an African'. This will remind you that you are a child of this continent, and you should do everything to give back good things to it.

When a young African is subjected to this kind of visuals for the better part of their three, four or five years in DeKUT, it does something to their spirit and thinking. As you leave DeKUT, you want to make those African Heroes proud. You go out to your community knowing that one day, your name might be mentioned in Heroes Garden.

I am not sure how well I performed in that assignment, But what I know is that it gave me more points to build on my final score.
Cheers to the spirit of Dedan Kimathi,

By Njeri Muthoni
Alumna, DeKUT



THE ERA OF CORONA VIRUS; WHAT YOU NEED TO KNOW



The coronavirus and the key things you need to know

In December 2019, a new coronavirus (COVID-19 virus) emerged in Wuhan, China. Since then, the virus has rapidly spread to many other countries worldwide, causing a million infections and has led to over a million deaths across the globe. The virus spreads through respiratory droplets or aerosols, causing respiratory disease. Measures to contain the virus have included the introduction of social distancing measures, hand hygiene measures, travel restrictions, closure of public spaces, and the wearing of face masks. Despite these measures, the number of positive cases and deaths across the globe continues to increase daily.

One of the most effective public health interventions in history is using a vaccine to curb all preventable diseases. A vaccine to prevent COVID-19 disease is the most effective way to control the pandemic. Scientists worldwide have worked to develop vaccines that have then been rigorously tested for safety and efficacy.

To address any concerns that the population may have and deal with the fear of the vaccine's safety, it is vital that all of us receive the right and correct information regarding vaccination and make an informed decision in health matters.

The Dedan Kimathi University of Technology has been at the forefront in creating awareness and sensitizing the population on COVID -19 through technology https://covid-19.dkut.ac.ke/. The virtual platform has been used to address the emerging issues during the COVID-19 pandemic, thus reducing the negative effects that the disease may have on the population. In addition to the available information, you need to know:

- ***How vaccines work***

Vaccination involves the introduction of a weakened or dead pathogen to our bodies which causes the body's immune cells to make antibodies to attack the pathogen. The devel-

oped antibodies help the body to fight back if exposed to the pathogen again.

- ***What constitutes the vaccines***

Vaccines can be live attenuated containing a weakened pathogen or contain a subunit of killed, antigenic component of the pathogen. They can also be inactivated containing a killed pathogen or toxoid containing a toxin made by the pathogen. Some vaccines provide life-long immunity from a single dose, while others offer greater protection after multiple doses.

- ***COVID-19 Vaccine***

To date, there are four categories of COVID-19 vaccines in clinical trials: WHOLE VIRUS, PROTEIN SUBUNIT, VIRAL VECTOR, and NUCLEIC ACID (RNA AND DNA). All these types of vaccines protect people by producing immunity in a slightly different way. The whole virus uses a form of the virus that has been inactivated or weakened, so it doesn't cause disease but still generates an immune response. Protein-based vaccines use harmless fragments of proteins or protein shells that mimic the COVID-19 virus to safely generate an immune response. Viral vector vaccines use a safe virus that cannot cause disease but serves as a platform to produce coronavirus proteins to generate an immune response. RNA and DNA vaccines use genetically engineered RNA or DNA to create a protein that itself safely prompts an immune response.

- ***Current COVID-19 Vaccines in Kenya.***

Though there are five types of vaccines that have been approved globally, currently, only AstraZeneca (viral vector vaccine) is available in Kenyan health facilities that can maintain the recommended storage temperatures. The vaccine is given as an intramuscular injection on the left upper arm, two doses given eight weeks apart.

- ***Who should receive the COVID vaccine?***

The vaccine is recommended for adults of various ages, including those with long-term conditions. Currently, the vaccine is not being administered to children since there is no safety or efficacy data available for children under 16 years of age.

- ***Possible side effects***

Like any other vaccination, mild reactions are expected, indicating that the vaccine is functional. Such reactions may include headache, nausea, fatigue, myalgia or muscle pains, malaise, fever, and chills. Those related to the injection site may be tenderness, pain, warmth, erythema, pruritis, swelling, and bruising. These side effects are managed with mild analgesics such as paracetamol.

- ***Addressing the concerns***

The fact that both the virus and COVID-19 vaccines are new, a lot of research is ongoing, and more information regarding the vaccine will be generated, including how long protection of COVID-19 vaccines will last. With this in mind, you still need to wear a mask, social distance, and avoid crowds – even after you get vaccinated. You should also be vaccinated, even if you've already had a COVID-19 infection.

Having received the vaccine four days ago, the author experienced a mild headache one day after injection but took paracetamol. Since then, she has not had any other reactions.

By Dr Florence Mbuthia, Ph.D.
School of Nursing

RESILIENCE STORY

My name is John Maina I was admitted at Dedan Kimathi University of Technology on 4th June, 2017 to pursue Bachelor of Science in Computer Science.

My life was fairly normal as a campus student, until March 2020 when I started experiencing intermittent pain in my left knee. Since I used to play soccer, I was not worried much. I'd keep telling myself that the pain was as a result of a sprain I suffered to my leg earlier on while in the University football pitch. I sought medical attention at the University Medical Clinic but the pain crept up silently, refusing to go away. This continued for a while. I was on pain management drugs, with the pain drifting away, then creep back slowly after a few hours. With advancing pain, I reasoned that probably it might have been a muscle tear to my knee, and that it'd go away with time. However, this was not to be. On 13th March, 2020 while celebrating my 22ndbirthday bash with my friends and family, I realized that, in the midst of all that was meant to be fun, the pain from my leg was too much, stealing the birthday show away from me. I was literally limping into "fun moments". After the bash, I decided to leave University (Dedan Kimathi University of Technology) to my residential home at Nakuru to seek medical attention.

Early diagnosis

Within two weeks of being home, my Mom and I visited an orthopedic surgeon who ordered a biopsy. I was operated on at Evans Sunrise Medical Centre and being my first experience in a hospital theatre for an operation, I was petrified. I was operated on successfully and the flesh sample taken for biopsy. Waiting for these results was indeed a frightening period for me, I experienced strong emotions; including fear, anger, disbelief, and deep sadness. My family and close friends gave me a congenial environment; coupled with encouraging words and empathy. Visiting a counselor often, before the biopsy results came in held my mental faculties intact. It was of great help since it eased my anxiety to an extent that I felt relieved. Sadly, when the biopsy was out, results indicated that the tumor was cancerous (Osteosarcoma). I felt demoralized; questions flew off my mind, repeatedly asking myself if "all the events unfolding were real". The word 'cancer' had not crossed my mind, and basically this was not the opportune moment for the cells to establish a niche in my leg. My world changed instantly. My beloved aunt had just succumbed to cancer barely a month prior to my diagnosis. Life was happening too fast. We consulted various Oncologists and Orthopedics' on best management and we were advised to seek treatment at my home county (Nakuru) owed to the fact that it was during this period when everyone globally was navigating COVID-19 quagmire.
Treatment

The oncologist recommended six cycle chemotherapy regimens. It is while at the cancer Centre, that my first ray of hope in life beyond cancer triumphed. Family and friends were on standby to trend the road down treatment with me. I felt genuine concern and empathy from everyone. My Mom and my sister would stay with me in the hospital ward for more than six hours during chemotherapy sessions. Talking to other patients experiencing the same illness, and receiving the same treatment gave me a renewed sense of confidence; to endure and want to live. I was positive, my prayer and hope was that the treatment would respond, and have my leg intact. Unfortunately, the cancer had spread to my left lung and the tumor failed to respond to the chemotherapy regimens. The orthopedic surgeon recommended leg amputation above the knee to prevent further spread of cancer cells to

other parts of my body. To say the truth, this was too huge news for me; "was I living a dream?"

New perspective.

I was amputated towards the end of October 2020. My studies had to halt a little bit and I decided to apply for my third-year special examinations on medical grounds. This request was granted. On 22nd December, 2021; I went for a CT scan and MRI (magnetic resonance imaging) and the results were genial. This came as a true report from GOD "my body had cleared off all cancer cells". This piece of news elated me. No more chemo: all the misery endured with the medication; servings of bad days full of extreme fatigue, nausea and pain.

My new normal

In as much as I have encountered a rough patch in my life path, I see a star in the darkest of the night. I have renewed my relationship with God, counting my blessings one by one. In my new normal, I have come to realize that God's peace which passes all understanding comforts and soothes better than any song or salve. Acceptance and positive attitude has been key to overcoming all my adversities.

The new John back to Campus

Back to campus, life was initially quite tough. I suffered public phobia; the many questions from classmates and friends were overwhelming. It felt different to live as an amputee; with crutches, no more soccer, struggling with basic chores; living life differently, literally! However, things are easing up: at my place of residence the caretakers received me warmly by providing a ground floor room to ease my mobility when accessing student accommodation. In campus, attending classes has become easier, I am grateful to the University Management for providing me with transport to and from class. A bunch of appreciations to the disability service tuktuk driver, Mr.Michael, The University Disability Mainstreaming Officer, Ms. Winnie Njeri has been such an inspirational, making me accept my condition more, as well want to strive to the highest. Counselor Waithera has walked with me, observing silently, rejoicing and celebrating my every achievement. All these people, as well all my friends and classmates have made my stay in DeKUT manageable. This has helped me adapt positively. Engaging substantially in self-care: swimming, reading and listening to music have kept my sanity rejuvenated.

I have a strong conviction to want to reach out and inspire those of you suffering in silence; for I strongly believe and have every reason to be optimistic and want to transcend in life. To you my fellow comrades languishing in diverse adversities, arise, wipe off the dust and move on. Together, and with support from DeKUT, we are set for heavens.

Currently am in my final year 4.2 and am looking forward to become a Data Scientist with an open mind to venture into other relatable fields that will provide platform for me to inspire and help the vulnerable persons in the society.

DO THERAPISTS SOMETIMES CRY OVER THEIR CLIENTS?

I first saw John sometime early this semester alighting from the University tuktuk.

I was a few kilometers away and could not make to reach him immediately. He was heavily hooded, bespectacled and donned a face mask. Later that day, John sat with me in therapy; and the traumatizing story of an encounter with a diagnosis of cancer, including treatment and life struggles was revealed. A jillion thoughts razed my mind. That evening, as I sat down with my personal therapist, an intense emotion hit me. A tear, just one was shed… (And yes! Therapists do cry); a moment of therapist's transference of emotion!

THE PSYCHOLOGICAL ASPECT OF LOSS OF A LIMB.

The loss of a limb is irrefutably a testing experience more so to a young person. Individuals usually feel a deep sense of loss and declined self-esteem. Some patients may even develop depression. It takes time for amputees to ultimately process the loss and accept that the limb that they have lost will never come back. This makes the patients struggle with the new normal before they are able to get on with their lives the best way that they can. Having a positive mindset coupled with physical rehabilitation will speed up the healing process. Protective factors in recovery include immense social support: family and friends who offer support to patients make them feel less overwhelmed with the change.

For amputees, the loss of a limb might put them through emotions similar to those experienced by a person who is bereaved. They encounter the five stages of grieving by Kübler-Ross. These five stages of grief model (or the Kübler-Ross model) postulates that individuals experiencing grief go through a series of five emotions: denial, anger, bargaining, depression, and acceptance.

1. Denial – the patient is unable to accept what has happened to him/her
2. Anger – *"why me?"* This is the most commonly asked question by patients at this stage of grief. They may also act out in frustration.
3. Bargaining – Patients seek solutions to counteract what has happened. They may negotiate with doctors to help ease their problem
4. Depression – hopelessness sets in and the patient feels like there is nothing that can be helped. There is loss of faith/hope in a bright future
5. Acceptance – positivity starts to set in and the patient will finally accept that since there is no way of reversing the situation, it would be best to make the best out of it.

It will take time and effort to drift to the last stage of acceptance. However, once a patient shows signs of positivity, it is recommended that you walk with them on the right path to recovery and to reclaim normalcy in their lives. There is life beyond amputation; in fact, it can be lived even better than before.

John is clearly negotiating and accepting; he will finally surpass the suffering and get to higher life throws. During my last visit at his residence with the Disability Mainstreaming officer; four things made me feel like shedding a second tear; this time, a tear of joy: he leapt joyously from his bed to the door to usher us in, and as we checked out of the room, he leapt back to the door, pulling his leg cloak with one of his clutch. The third remarkable achievement is that he comfortably and happily escorted us to the gate on our way out; slowly, public phobia taking a back seat. Finally, the hood has been shed off! In its place stands John's blissful face exuding immense confidence and resilience.

The story of John, his struggles & resilience inspires everyone experiencing a difficult situation in life, and ALL amputees who have gone through the same experience of having a limb removed due to illness or trauma, and know that they are not alone in their journey to recovery.

SHOULD YOU CRY AS WELL?



Crying has been defined as a normal mankind response to a full range of emotions with a number of health and social benefits; including self-soothing effects and pain relief. However, if your crying occurs recurrently, overpoweringly, or for no reason, it could be a sign of depression. Consider speaking to your therapist/doctor.

By John Maina and Teresa Waithera



UNDERSTANDING MENTAL HEALTH

What is mental health?

It is a term used to describe a person's emotional and psychological well-being. In obversity to well-being is disorder, which brings me to a new term-mental health disorder or mental illness. Psychology defines it as a condition that affects the way a person thinks, feels and behaves. More temporarily, it also affects their moods. The most common diagnoses include; clinical depression, anxiety disorder, bipolar disorder, dementia, Attention Deficit Hyperactivity Disorder (ADHD), schizophrenia, Obsessive-Compulsive Disorder (OCD), autism and Post- traumatic Stress Disorder (PTSD). One can function normally with any of these conditions. It is also important to highlight that mental illness is nothing to be ashamed of. One should feel free to seek professional assistance if they need it. In reference to the maxim 'prevention is better than cure', maintaining mental health is encouraged. The World Health Organization lists social, cultural, economic, political and environmental factors such as national policies, social protection, standards of living, working conditions, and community support as determinants for mental health.

Why does Africa need to talk about mental health?

The COVID-19 pandemic has brought about a sequence of events that are either unprecedented, traumatic or both. The years 2020 and 2021 have thrust our society into an essential need for social distance. More people are experiencing anxiety, depression and inevitably stress. Stress, genetics, nutrition, perinatal infections and exposure to environmental hazards, is a contributing factor to mental illness. In Africa, unfortunately, mental health/illness is a concept that still needs demystifying. Most people do not know about it; those who don't understand it and those who understand it are limited in what they can do. If we are to emerge from the mental health impact of the pandemic successfully, the conversation on mental illness

needs to be tabled.

What can we do about mental health?

According to the latest statistics, many African countries allocate less than 1% of the national budget to mental health. This results in poor or non-existent access to evidence-based care and the need for long-term care and increased care costs. African leaders are encouraged to invest in managing mental health.

Community-based rehabilitation initiatives can improve mental healthcare, especially if the government provides them with incentives like funds and tax holidays.

The mental health journey starts with an individual and it is therefore crucial that each of us accepts the responsibility to learn about it as much as we can and as often as we can. This will help disparage a lot of the myths and stigmas surrounding it.

Mental health is a journey. That is why it is called the road to recovery. Like all roads, there will be curves and bends, twists and turns, as well as humps and flats. Sometimes you may want to give up but don't. You may have to start over, so turn around. It may hurt to go through but keep going anyway. That very darkest hour means the dawn is coming.





Luswata Gladys Nakuya
MSc. Geothermal energy Technology

THE JOURNEY OF SPIRITUAL UNION WITH GOD AT DeKUT



After twenty years of absence from my home Archdiocese of Nyeri, among them 14 years as Secretary-General of Kenya Conference of Catholic Bishops and six years of studies abroad, I expected to settle in an ecclesiastical environment and slowly retrace my way around my home town. Perhaps I should have left my options open, but as a priest and pastor, for that matter, my obvious guess was to do direct pastoral work. Nevertheless, here I was, in Dedan Kimathi University of Technology (DeKUT), a Public University, one I only saw on my way to other destinations. My appointment as Senior Lecturer and Head of Chaplaincy at the University sealed my options. However, though it was a great surprise, my personal experience three months later has re-shaped my worldview on many issues.

I knew I had to find joy and fulfillment in this unique but seemingly strange environment. Like any good pastor, my question was whether I would find spiritual fulfillment in *paperwork* away from *people work*. What has *paperwork* to do with Jesus and his priest, or is it just more junk for Jesus? Little did I know that I was to have plenty of both *paperwork* and *people work* and plenty of spiritual and pastoral fulfillment.

My initial encounter with the Vice-Chancellor and the University Appointing Committee was as pleasant as it was a nightmare. I had no such experience ever before. It was an awesome experience. I was scared, though. It was always pleasant to be a student, and look forward to good academic and overall results. However, here I was about to become a teacher and the chaplain for DeKUT. I wondered whether I was going to satisfy the pastoral and spiritual yearnings of the esteemed DeKUT community. All the people I met after that, from colleagues in the faculty and other staff to the wonderful students, were simply sources of encouragement. The encounters gave me hope that somehow, I could manage my new assignment.

About three months down the line, I can say without a doubt that joining DeKUT as an institution and its family was the best thing that happened. It was a blessing in disguise. It dawned on me that I was not walking alone. My memories of the reception at the Directorate of Students' Welfare and later at the Institute of General Studies still linger. I felt a deep appreciation of the simple newcomer in me. All

these encounters and interactions spoke volumes about the ethos that guides the life in DeKUT. I concluded that God deliberately introduced me to a public institution to experience Him in a new way.

My personal experience in DeKUT has reshaped my worldview, a challenge to redefine God's presence among his people in different ways and places. It has proved that there can be a deep appreciation of God in places and activities that always passed as far-flung and secular. God has no peripheries in His embrace. We can harness spiritual fulfillment in all places and functions, whether public or otherwise, provided the motivation is driven by the love of God, the good of fellow men and women, and the good of the institution and its mission.

The intention and, indeed, the end of a human person in their functions is happiness. We must search for every action to capture some motivating source of happiness. The hope, happiness, and meaning we all seek can only be found in a life of self-giving rather than self-serving. All services are a potential spiritual pathway by which good people can become better people through the gift of oneself to others in selfless service in the footsteps of Christ, who gave his all for others. Work, including academic and other professional areas, can be a praxis- an activity that can transform not only the lives of others but also our own life and a way of being in the world.

Men and women seek happiness in every human act. This underlying motivation cannot be disputed. The fundamental meaning of happiness is beatitude or blessedness, which surpasses temporal joy. This happiness cannot be apart from God. St. Thomas Aquinas, a great theologian, and philosopher teaches us that God is our ultimate yearning in everything we do. St Augustine of Hippo corroborates this fact in his assertion, feciste nos ad te (You have made us for yourself). Everything must serve this purpose. God has given the human person the ability to grasp Him and the path leading to Him.

Temporal happiness leaves an urge for more fundamental happiness, more meaningful enjoyment. The desire for more is a pointer that our ultimate happiness is not yet beholden in this life. Everything we do is a means to a higher goal that cannot be realized unless God and finding Him are our motivation. Only then can fulfillment in blessedness supersede the joys and sorrows in temporal service. God is our ultimate desire and enjoyment par excellence. All we are and do in DeKUT finds fulfillment in achieving our vision. However, the ultimate fulfillment is in God, the Supreme Being. We are a unity in a diversity of religions and professions.

There are many institutions locally and abroad that are already done with God. They revere Him not and call upon his holy name no more in the pretext that God is a distraction to scientific reasoning. DeKUT is proof that the appreciation of God in the life of any institution can neither diminish nor depreciate its professional or scientific appreciation and performance. If anything, it adds value. DeKUT has a marked place for God in everything. The value of moral guidance and integrity is on every script and practice. In meetings of whatever nature, God is the alpha and omega.

While the various buildings and their domes in DeKUT strike a unique architectural heritage, they simultaneously inspire a holy feeling and presence. They remind me of the cupola on Rome's buildings that inspire people to revere God and his wonders. The several schools and institutes spread across the vast fields of DeKUT and the busy staff and students around them portray a commitment to a mission with a holis-

tic purpose and focus. The inspiration to build a solid African identity into future professionals is an appreciation that Africa has something to offer to the world. We must redeem our people from the historical prejudices against Africa and what is African. DeKUT affirms in practice and foresight the incredible African capacity of innovation, both actual and potential in all fields. Thus, DeKUT, apart from preparing intellectuals of high caliber from its schools and institutes, aims at producing professionals with a solid African identity who are equally morally outstanding men and women whom the society can rely on. Built on integrity as a core value, DeKUT has a niche now and in society's future. Therefore, it is pleasant to be the Head of Chaplaincy for the esteemed DeKUT fraternity and teach Kimathi students (as they are popularly referred to) with a holistic approach.

DeKUT is a Public university with a difference. It is where service meets charity and where the secular the sacred/spiritual meet and embrace. The academic formation blends with moral guidance. It is a challenge to realize that when an academic mission is blended with spiritual ingredients, the vision is holistic and visible in the product, an all-round professional. Society everywhere is dying for such firmly anchored and all-around servant professionals.

By, Rev. Fr. Dr. Vincent Wambugu
Head of Chaplaincy & Senior Lecturer

DeKUT OUTDOOR ADVENTURE ACTIVITIES

Our Outdoor Programs serve to experientially fast-track embracement of some of the much-needed Common Core Values of teamwork, inclusion, diversity, cohesion, and assimilation while subsequently immersing our students and staff into a new world of Outdoor Recreation and Adventure lifestyle.

Chemistry mixes the immiscible! A rare blend of Chemistry and Security staff members participate in a team activity known as "Atom transfer".

At our outdoor laboratory known as the DeKUT Challenge Course, the participants are exposed to diverse pre-set challenges that require teaming up in order to overcome various obstacles that stand in between them and the accomplishment of the task.

Process versus product

They have to strategize, communicate, meet deadlines and be accountable; because what they do and how they do it has direct impacts on the results. At this point, the participants may realize that although ideas and results are highly valued, it is the method that matters more if we are to have sustainability.

In the excursion and expedition versions, we address key dynamics that are readily transferrable to the participants' areas of work, learning or living.

In totality, the activities provide us with a classroom and an opportunity where we could

construct, orchestrate and instruct some of those dynamics that are readily transferable to the participants' physical and physiological environment that include: -

- Cooperation and Teamwork
- A sense of place
- Communication and positive interaction with the community
- Problem-solving, trust, perseverance and endurance at difficult times
- Risk and Safety margins in the planning and execution of outdoor activities
- Propagating skills that are the basis of our survival, safety, comfort, thriving and fun

Below is an overview of the internal structure of our outdoor adventure programs: -

1. Climb to educate

This is a flamboyant and extremely prolific program for both our students and staff.

Since its inception at the end of year 2014, we have successfully enrolled 250-300 students each year who spend a part of their evenings and weekend working out at the DeKUT Challenge Course as well as hiking in excursions.

The culmination has habitually been a 4–6-day camping and climbing expedition to Mt. Kenya. Earlier on in February 2020, we had already conducted our initial 2 local excursions to Nyeri and Nyana hills. Our students were already eying on Mt. Kenya season 7 for the year 2020.



That was way back before nature dealt us a curve-ball in the shape of Covid 19.

And so, when Universities hurriedly closed by March 15, 2020, the chances of summiting Mt. Kenya later in the year became few and far between.

2. Freshmen Bonding & Integration (FBI)

Following the admission of each new and unique generation of freshmen into our University, the Outdoor Section stages an Outdoor Program that serves to experientially fast-track settling and embracing of the much-needed values of sense of place, teamwork, inclusion, cohesion and assimilation. The 2–3-week program subsequently immerses the students into the DeKUT lifestyle of outdoor adventure.

In October 2020, the first-year students first set their foot onto a physical campus! The FBI program, as it is popularly known, kicked off for three consecutive weeks both at the Challenge Course and on three external excursions to Nyeri hills, without any "Noisy" results! Due to the new protocols on social distancing, only a dismal 620 students participated in the program and were exposed to its core curriculum



First-year chemistry students and staff during an FBI activity at the Challenge Course

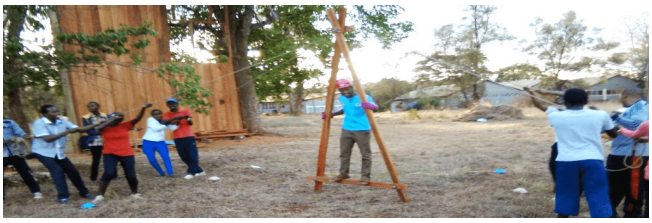
3. Aerobic exercises

The workouts are designed for body fitness as a prerequisite to participating in our multi-day

expedition to Mt. Kenya.

4. Team-Challenge activities

"A-Frame"-Team challenge- cooperation, trust, communication, problem solving



Participants get to recall and utilize several principles and dynamics of physics before they can navigate gravity and set the "A-Frame" and its occupant in locomotion.

"Sunny side up" is a game that requires the participants to thrust the ball upwards, flip the mat and catches the ball back on the underside. To the right is the pop game of "Big foot". We don't spare our staff members from extreme challenge activities either



5. Outdoor survival skills:-

Tent pitching in 5 minutes!



This is about preparing our mountain climbers for entry into a harsh climate through drills in camping and group travelling.

6. Local excursions.

The instructor points out at a nature nugget while students take a water break.
Climb to Educate program schedules at least 10 local trips with the purposes of enabling our students to:-

(a) Explore the countryside for orientation and recreational purposes. Our First-Year students and international staff and students also benefit from an earlier acquisition of a sense of place, learning social/cultural values and for their fast settling in our community.

(b) The magnitude of interaction in outdoor settings is overwhelmingly high. The diverse ethnicities and the" international atmosphere" at the Challenge Course & hiking trails propagate the appropriate physiology that enhances learning through peripheral perception, integration and bridging of the numerous cultural gaps, not to mention the overall benefit of physical conditioning and relaxation after a hectic academic day.

7. Membership into the Wildlife Clubs of Kenya (WCK.)

This has allowed the students to participate in various wildlife conservation activities.
The *"Leave No Trace"* (LNT) and *"Positive impact hiking and camping"* are environmental ethics that have been more caught than taught as portrayed by these Climb to Educate members during an environmental hike in a National Park in August 2019.
Students weigh and dispose collected plastic trash that littered the national park's trails

8. The International forum

The program, in collaboration with our International Office, has hosted interns from the following countries: -Germany, Austria, Czech Republic, Poland, Japan, Canada, Switzerland,

India, Malawi, Ghana and Sudan.

Apart from participating in our programs, the international students also get opportunities to teach games and specific skills in outdoor activities to the local students. Some of the activities that the students have been able to share or teach are: -

- Acrobatics
- Scottish dance and
- Instrumental music

Maria, volunteering German intern leads a duck-walk exercise at the Challenge course

9. The ultimate Mt. Kenya climbing expedition

The participants are subdivided into small group expeditions (SGE), here seen traversing the Alpine zone of Mt. Kenya on a 5-day expedition.

The statistical bit: -

So far, the program has successfully launched: -

- 52 local excursions,
- 14 Mt. Kenya multi-day expeditions and Several hundred evening exercise activities.
- By April 1 2021, a total of 6137 students and staff had participated in the program,
- 5155 students and staff have joined in the local excursion and
- 976 students and staff having climbed Mt. Kenya.

Below are some sampled sights from our trails and excursions

Climb to Educate members during hiking and clean up excursion at Ol Donyo Sapuk
Crossing a wild-bridge to access the Maumau caves along Tigithi River, Naromoru
Climb to educate" amphibians" enjoying a water-splash during a visit to mau-mau caves



Through such programs, we can at least hope that in the future, the participants shall see the need to work together in teams to resolve conflict and problems regardless of any boundaries or categories that they may find themselves in and into whichever fields they may venture.





By Kennedy Mwai,
Outdoor Pursuits' Instructor

DeKUT ENTERPRISES COMPANY

DeKUT Enterprises Company (DeKUTES) which is fully owned by Dedan Kimathi University of Technology is the vehicle through which Dedan Kimathi University of Technology commercializes its innovations and responds to the community needs. Through DeKUTES, University professionals are provided with a platform to bring together their expertise with an objective of providing appropriate business, research and innovative solutions as well as mobilize resources for the University.

Vision

To be a provider of choice, in consultancy, training and production of quality products leveraging on technology.

Mission

To leverage on highly qualified human resource in provision of consultancy, training and production of quality products utilizing recent technologies for the benefit of public, private and non-governmental organizations

Core Values

- Innovation
- Excellence
- Teamwork
- Integrity

PRODUCTS, SERVICES AND FACILITIES

The principal activity of the entity is to offer consultancies and training services, production of quality products such as yoghurt, detergent, personal protective equipment and coffee processing as well as hire of University facilities

DeKUT Premium Coffee

When looking for the best coffee brands in Kenya, DeKUT Premium Coffee is a sure winner. Through Institute of Food Bio resources Technology (IFBT) we process our coffee produced from 100% Arabica beans grown at the Dedan Kimathi University Farm into a cup of high-quality coffee. The Coffee is processed from a blend of the three premium grades namely AA, AB & PB by coffee experts to ensure excellent quality and that uniqueness of the coffee is maintained. Our medium roasted coffee is prepared for those who prefer black coffee while the dark roasted coffee is for the white coffee lovers. The roasted coffee is medium ground to ensure that flavor extraction is optimized in various brewing methods. In addition, the Coffee Extract is used to produce flavor for the DeKUT coffee Yoghurt.



DeKUT Premium Coffee

DeKUT Yoghurt

Again, through IFBT we produce one of the best healthy yoghurts in Kenya, It's produced with all natural ingredients and no synthetic additives or preservatives are used hence safe for human consumption. Our diverse and unique flavors of yoghurt include coffee yoghurt; chia

enriched yoghurt, vanilla flavored and strawberry flavored yoghurt as well as natural yoghurt. They come in various serving sizes as well, including 250 ML, 500 ML and 1 L. When it comes to value for money, consumers choose DeKUT Yoghurt as the best yoghurt brand.
Different flavors of DeKUT Yoghurt



Branded Items

In conjunction with Institute of Technical and Professional Studies (ITPS), DeKUTES make garments ranging from branded polo shirts, blouses, dust coat, shirts, caps and t-shirts for both adults and children. Our garments come in customized sizes, designs, cuts, finishes and decorative processes that suit corporate and individual requirements.





DeKUT branded cap and shirt



Dustcoats made for equatorial nuts and branded cups

Multi-Purpose Detergent

DeKUTES through the Department of Chemistry has been producing affordable quality Multi-purpose detergent which has an effective high cleaning power making it the best choice for dust, stain and odor removal on surfaces. In addition; it is an economical and pocket friendly detergent that best suit your needs. The detergent is used for cleaning surfaces, utensils, cars, etc.



DeKUT Multipurpose Detergent

Conferencing

DeKUT offers one of the most exclusive venues for corporate events in Nyeri County. We have well equipped conference facilities and venues ideal for boardroom meetings, training, seminars and conferences, team building and other outdoor activities. Our different venues can hold small and large groups of up to 1,000 persons. With a unique design, our venue can be

tailored to any style or theme that you are hoping to convey. Our state-of-the-art technologies and modern design allow for amazing customized wall graphics or lighting. In the 2020/2021 financial year we hosted several organizations for conferences including National Treasury, Micro and small Enterprise services, National Construction Authority, Insurance Regulatory Authority, The Judiciary, Ministry of Education, National AIDS control Council, Research Triangle Institute International, Nyeri County Public Service Board, among others. All our clients had all praises for our facilities as well as meals provided during the conferences. The conference meals were provided by DeKUTES in collaboration with our able University Catering Department



IRA – Workshop for stakeholders and media engagement (March 2021)



Some of our Covid19 Compliant Conference Venues

Short courses

DeKUTES recognizes that short courses are an integral part of organizational growth and career development that can be used to enhance knowledge to the trainee. Some of the short courses undertaken during the year include Cyber Security, Digital Forensic, Huawei Certified Network Associate (HCNA), Personal Financial Planning, Tax Planning and compliance, Financial Management for Non-Financial Managers, Accounting for Non-Accountants, Statistical Packages for students and teachers, and Enterprise Risk Management. In addition, DeKUTES focus on developing short courses that address the emerging issues that affects both corporate and individuals with a view to equip the participants to cope with emerging trends.



Digital Forensic Short Course Training at DeKUT Nairobi Campus (March 2021)

Consultancies

DeKUTES is keen to enhance the productivity and performance of enterprises by offering various consultancy services such as strategic planning and business plan formulation, baseline survey, feasibility studies, customer satisfaction surveys, employee's satisfaction surveys, employees training needs analysis, internal controls, performance evaluations and appraisal. The company engages the huge pool of professionals from the University who have accumulated wealth of experience in specific areas. In addition, specialized facilities at the University create an avenue for DeKUTES to accommodate large number of participants while observ-

ing Covid 19 regulations.



Consultancy with Nyeri County on Training of Co-operative Officers and committee members

CORONA VIRUS RESPONSE

The COVID-19, caused by a novel coronavirus, has affected the entire globe and continues to alter lives. This caused a dramatic shortage in the supply of protective equipment, which has been hampered by a number of issues, including export and travel restrictions to and from some producing countries. While this pandemic is still with us and may be for some time, Dedan Kimathi University of Technology through DeKUTES continues to be in the forefront in supporting the Government of Kenya to combat this pandemic and ensure safety of life for the community and the entire nation. As a result, DeKUT Enterprises Company has been working with various departments in the University to provide quality products at affordable rates. This happened while the entire country was in lock down in 2020. Researchers at DeKUT worked tirelessly to provide solutions to the Covid-19 pandemic while everyone else was at home protecting themselves from the pandemic. DeKUTES worked with various University Departments and Institutes to respond to the Covid-19 crisis as described below.

DeKUT Face Masks

DeKUTES is now known for its signature three ply face masks and has made quality designs for the community and different organizations as a protective measure against Covid-19 pandemic. So far, more than 500,000 face masks have been produced and sold the pandemic began in 2020. The quality of our masks is unmatched as they were a product of concerted research through the University Research, Innovation and Community Linkages Directorate. The research was focused on establishing the best material that can prevent droplets from coming through yet at the same time allow good breathing. Through these researches, we settled on a three ply face masks that perform at the same competence as that of surgical face masks, DeKUT face masks are breathable, washable, and reusable. The production of face masks brought together members of staff, fashion design students and tailors from the surrounding community who were vetted for quality and given the opportunity to earn a living during the initial lockdown period.



Three ply DeKUT face masks produced by DeKUTES

Hazmat suits

Like the Face Masks, our Hazmat suit was a product of intense research guided by the need

for the final product to be resistant to microbe penetration as well as resistance to fluids penetrating the material. It therefore offered the best solution to first responders that come in contact with potential Covid-19 positive persons. We produced and sold more than 500 Hazmat suits of different colours including white, blue and gold.



DeKUT Hazmat Suit

DeKUT Hand Sanitizer

In order to achieve its vision of providing solutions to problems facing our society DeKUTES through the Department of Chemistry is producing affordable sanitizers which was approved by Kenya Bureau of Standards (KeBS) and licensed by the Pharmacy and Poisons Board. We have made the sanitizer the cheapest in the market so that it can be affordable to all Kenyans as our quest was to provide a helping hand to a distressed population. Our sanitizer cleanses and conditions hands on-the-go.



DeKUT Hand Sanitizers produced in different sizes and colour

DeKUT Hand wash

DeKUTES is also producing the best hand wash through the Chemistry Department. DeKUT Hand Wash with an upgrade moisturizing formula is gentle to your hands, makes your hands soft leaving a nice smell after use. The hand wash provides germ-free protection and keep your hands fragrant.



DeKUT Hand wash

Hand Sanitizer Dispenser

Through the Mechanical Engineering Department, DeKUTES has fabricated Hand sanitizer dispensers. Our foot operated Hand sanitizer dispenser uses a hand free activation method to eliminate cross contamination and it works in all kinds of environment. A number of them have been made and sold to secondary schools in the last financial year.





Hand sanitizer dispensers ready for dispatch to one of the clients

Where are our products found?

We have a DeKUTES Outlet located at Dedan Kimathi University Main Campus which serves as our sales point of all our products. This outlet is conveniently located near the University main gate allowing staff, students and visitors to grab a gift or product on their way in or out of campus. Indeed, it's also accessible to our external customers DeKUTES products are also available at DeKUT Nairobi Campus for those living in Nairobi and its environs. Furthermore, DeKUTES can ship any of its products to any parts of the country at the purchaser's cost. More recently, Chieni Supermarket now stocks our Coffee and sanitizers even as we roll out more products to the market external to the University.



Students enjoying yoghurt outside DeKUTES outlet

IMPACT OF DeKUTES TO THE UNIVERSITY

DeKUTES has significantly empowered the IGU's through procuring essential equipment required to increase levels of production, efficiency and quality of its products. All IGU's are housed and run by Institutes and Departments within the University and as a result any device bought by DeKUTES is available for use by the Department / Institute for teaching/ learning when not in use by DeKUTES. Some of the equipment procured for the IGU's in 2020-2021 include;

i. Industrial Straight Sewing Machine

DeKUTES equipped Fashion Design IGU with additional six industrial Straight Sewing Machines in the year 2020. The industrial sewing machines are power-driven and run at very high speed. The machines are normally used in mass garment production hence they were procured as a result of increased production of face masks, hazmat suits and other personal protective equipment as the company embarked on measures to combat COVID 19. The machines are available for use by students pursuing Fashion Design Certificate and Diploma program at the Institute of Technical and Professional Studies (ITPS). These equipment have provided a much-needed face lift of fashion & design workshop creating a great avenue for workshop practice by students in this program. Furthermore, this equipment has a wider impact on the community around DeKUT as they benefit with contract jobs whenever DeKUTES has an order to meet from the industry.



Industrial Straight Sewing Machine (left) & and Overlock Machine (right) procured for the Fashion Design IGU.

ii. Straight Knife Cutting Machine

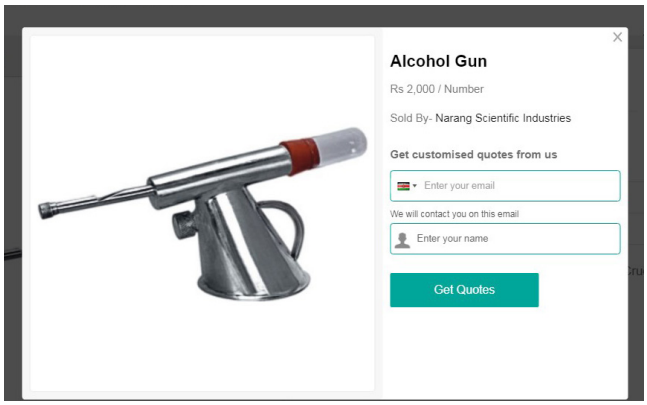
DeKUTES also procured Straight Knife Cutting Machine for Fashion Design IGU which is most useful cutting instrument in apparel cutting both woven & knit fabric. A large number of fabric lays can be cut by the machine at the same time due to high length of knife & revolutions per minute of the motor. So, productivity is high for large production. The machine is also available for use by students pursuing Fashion Design Certificate and Diploma program at the Institute of Technical and Professional Studies (ITPS).



Straight Knife Cutting Machine procured for the Fashion Design IGU.

iii. Alcohol Milk Testing Gun

DeKUTES equipped Yoghurt IGU with an Alcohol Milk Testing Gun which is an essential component in testing the quality of fresh milk to indicate whether it will coagulate on thermal processing. The Alcohol Milk Testing Gun is available for use by students pursuing Diploma and Bachelor Degree in Food Science and Technology at the Institute of Institute of Food Bio resources Technology (IFBT).



The Alcohol Milk Testing Gun procured for Yoghurt IGU.

iv. Induction Aluminum Foil Sealing Machine

Induction Aluminum Foil Sealing Machine was also procured for use by Yoghurt IGU. The machine is used to seal yoghurt with aluminum foils which makes the bottles leak- proof & tamper evident and offers extended shelf life. The filled and capped bottle is passed under the cap sealing machine head and the sealing is done through a no contact method. The Induction Aluminum Foil Sealing Machine is available for use by students pursuing Diploma and Bachelor Degree in Food Science and Technology at the Institute of Institute of Food Bio resources Technology (IFBT).



Induction Aluminum Foil Sealing Machine was procured for Yoghurt IGU

v. Continous Band Sealer

DeKUTES equipped Coffee IGU with a Continuous Band sealer that can seal thermoplastic bags of any size, length, and thickness up to 500 microns. The variable conveyor belt speed is adjustable to accommodate materials varying in thickness. The device is ideal for projects which require higher production rates and minimal space and costs. Sealer operation is extremely simple as the operator needs only to feed bags into the machine and it is designed to seal any thermoplastic material, including Polyethylene, Polypropylene, and laminations containing foils, such as those used to package coffee. The machine is available for use by students pursuing Certificate/Diploma in Coffee Technology and Quality Management at the Institute of Institute of Food Bio resources Technology (IFBT).



Continous Band Sealer procured for the coffee IGU.

vi. Coffee Roaster

DeKUTES was cognizant that roasting of coffee is what produces the characteristic flavor of coffee by causing the green coffee beans to change in taste. During the process of roasting, the coffee cherry seeds are processed into augment aroma and flavor which ultimately increase solubility. In the year 2020, DeKUTES equipped Coffee IGU with Coffee Roaster to ensure that the quality of the beans is processed by own machinery through standardized processes. The Coffee Roaster is also available for use by students pursuing Certificate/Diploma in

Coffee Technology and Quality Management at the Institute of Institute of Food Bio resources Technology (IFBT). It's also available for roasting coffee to other farmers at an affordable cost.



Modern Coffee Roaster procured for the coffee IGU.

vii. Viscometer

DeKUTES equipped Detergent IGU with a Viscometer, an instrument for measuring the viscosity of liquids. The measurement of detergent viscosity is based upon immersing a specifically selected spindle within a sample of the product to test the flow of matter in the detergents. The Viscometer is available for use by students pursuing Bachelor of Science in Industrial Chemistry at the Chemistry Department.



Viscometer procured for Detergent IGU

viii. pH Meter

A pH meter was also procured for Detergent IGU which is electric device used to measure hydrogen-ion activity in detergents solutions, indicating its acidity or alkalinity. pH Meter is also available for use by students pursuing Bachelor of Science in Industrial Chemistry at the Chemistry Department.



pH meter procured for Detergent IGU.

Conclusion

2019/2020 financial year was by any standards a great year for DeKUTES with a lot of accomplishments with regards to its core mandate. Covid-19 pandemic provided unprecedented opportunity for rather company to produce unique products targeting the market with the sole goal of offering a helping hand to an ailing society. We shall continue to being proactive in the coming year working closely with the University, which provides a research and innovation backbone, to produce cutting edge products and meet the needs of the community around us. We have no doubt that the space to offer a helping hand through technology transfer, consultancies, training and innovative products can only expand. We look forward to a successful 2020/2021 financial year and wish our heartfelt congratulations to the class of 2021 as they graduate. May a world of opportunities open up for you as you step out to put into practice the many lessons acquired at DeKUT. Thank you for spending some time to read this article. Cheers!

Contact us:
DeKUT ENTERPRISES COMPANY
Nyeri-Mweiga Road
Private Bag – 10143, Dedan Kimathi, NYERI
Telephone: 0758 563586/ 0110 0912738
Email: dekutes@dkut.ac.ke, md-dekutes@dkut.ac.ke
Website: dkut.ac.ke
@DeKUTESkenya
Dedan Kimathi University Enterprises

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Dedan Kimathi University of Technology has a diverse student body that is both local and international. You're bound to meet different types of people in DeKUT and hence make many new friends. Located in the Kenyan highlands, it's one of the most beautiful and serene places to study, guaranteeing a conducive learning environment.

DeKUT is one of the safest places to study in Kenya and very family-friendly. Security on and off-campus is guaranteed, the University complements the nearby Kabiruini police post by having its own security personnel within the school on a 24-hour basis.

Modern facilities

Our campuses have everything you need to excel in your studies: high-tech computer labs, fast wireless internet, libraries, State of Art Engineering equipment, plus plenty of study spaces and places to chill out, and these will help you work on real-world projects in the business, IT and engineering industries. Our industry project units allow you to engage with major industry partners, solve real-world challenges and boost your employability.

Get career ready

At DeKUT, we encourage bold, independent thinking and offer the highest quality academic experience. You'll thrive on plenty of autonomy to direct your learning, with our tutors on hand to challenge your ideas and assist you in developing the practical skills, fresh thinking and confidence increasingly in demand/expected by employers. We've got you covered with one-to-one careers advice, interactive workshops, industry internships and more.

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Choose DeKUT and you'll put yourself ahead of the competition when the time comes to begin your career. With an award-winning careers service and courses built with your employability in mind, it's no surprise that most if not all of our graduates go straight into jobs or further study.

By Marketing Department

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Diploma in Coffee Technology and Cupping
Diploma in Information Technology
Diploma in Furniture Technology and Interior design
Diploma in Metal work, Welding and Design
Diploma in Building Technology
Diploma in Leather Technology
Diploma in Fashion Design & Interior Decoration
Diploma in Electrical &Electronics Engineering (Power Option)
Certificate in Coffee Technology and Quality Management
Certificate in Information Technology
Certificate in Furniture Technology and Interior design
Certificate in Building Technology
Certificate in Fashion Design and Interior Decoration

Certificate in Electrical and Electronics Engineering (Power Option).
Certificate in Metal work, Welding and Design
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For enquiries:
Registrar (Academic Affairs)
Private Bag – 10143, Nyeri
Tel: 061- 2050000
Admissions office: 0705 688135 admissionsoffice@dkut.ac.ke
Registrar Academic Affairs & Research: 0713 835965 registaraa@dkut.ac.ke
Nairobi Campus: 0710-127 516 directornairobi@dkut.ac.ke
Marketing office: 0713-123 021 marketing@dkut.ac.ke

@DeKUTKenya
Dedan Kimathi University of Technology
DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY (DeKUT)
dekutkenya
Dedan Kimathi University of Technology (DeKUT)

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DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY
NYERI - MWEIGA
P.O BOX 657, 10100,
NYERI, KENYA

vc@dkut.ac.ke
@DeKUTKenya
ADMISSIONS OFFICE:- 0705 688 135
REGISTRAR ACADEMIC AFFAIRS:- 0713 835 965
NAIROBI CAMPUS:- 0710 127 516
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www.dkut.ac.ke
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