DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

Better life through technology

6th Graduation Souvenir Magazine



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VICE CHANCELLOR'S MESSAGE



Welcome to the 6th graduation ceremony magazine. During this ceremony, we reflect on the growth of the institution and the all-time dedication towards holistic, quality education as we celebrate and congratulate this year's graduands.

The University is making steady progress in the development of its facilities, staff compliment and increase in the range of competitive academic degree programmes. This has contributed to the growth of our student population which now stands at 6944.

Since 2011, the University has been following an academic calendar designed to eliminate the time taken by a student between leaving secondary school and graduating from the University, which has been a national problem. Thus, because the first year students have been for University studies in September, almost 10 months after completing their KCSE exams, they have had to sacrifice one of their long holidays to recover the lost time so that by the third year they would be running on a normal April/May to December academic year. Congratulations to the graduands. Our goal has been that young people should not be delayed in their education as these are the most productive years of their life; time for us is of great essence and an important resource.It is for this reason that our sixth graduation ceremony may appear to be out of sync with the normal graduation season. In this regard, therefore, we welcome the reforms in basic education where now KCSE results are now released in December, allowing enough time for Kenya Universities and Colleges Central Placement Service (KUCCPS) processing of applications for University admissions to be completed by April. We thus, look forward to receiving this year's first year students in May.

A major development this year is the planned establishment of a National Science and Technology Park (STP) to be hosted in DeKUT, Nyeri Campus. The STP is sponsored by the Government of the Republic of Kenya through our Ministry of Education. The main purpose of the park is to provide infrastructure for development of innovations for commercialization and to facilitate transfer of technology from the university or institutions abroad into local enterprises. It will provide the innovators with the necessary facilities, guidance and mentorship for them to develop their innovations to a point where they can test the market or attract investors. The innovators are expected to be drawn from the academic communities of DeKUT and in other universities in the region. They can be undergraduate, master, or PhD degree students or be members of the academic staff. The DeKUT STP will be among the first two such parks which will be build, with the other to be established in Konza City. The will contribute immeasurably to DeKUT's attainment of her Vision: "To be a Premier Technological University Excelling in Quality Education, Research and Technology Transfer for National Development". We invite our students and graduands who have been active innovators to consider working with the park to now commercialize their innovations.

I would also like to take this opportunity to welcome the new members of Council, led by the Chairperson, Dr. Jane Nyakang'o, and to wish them well and assure them of the University's staff support as they steward this University to greater heights. We are grateful to the outgoing council members for their many contributions to the University.

Lastly, I take this opportunity, on behalf of the University Senate, management, and all staff to congratulate the graduands on successful completion of their studies and to thank their parents and sponsors, as well as our many partners and the Government of Kenya, for the support they have extended to the University.

Prof. P. N. Kioni

STANDING OUT IN HOLISTIC EDUCATION: LOOKING BACK AT MY GREAT EXPERIENCE AT DeKUT



Five years ago in September, I joined Dedan Kimathi University of Technology, then a constituent college of Jomo Kenyatta University of Agriculture and Technology, to pursue a Bachelor's degree in Mechatronics Engineering. I can recall units such as drawing, that had me carrying a T-square around campus throughout my first semester; a trademark for new engineering students. Nonetheless, I was privileged to be part of a vibrant class that made the learning experience all the more enjoyable. Through the academic highs and lows, this group always managed to be full of life and as a result the five years were a breeze. Away from class, I was an avid participant in both lawn and table tennis. These games gave me an opportunity to unwind after a long day as well as interact with students from other faculties.

What makes Dekut stand out for me is the University's commitment to providing a holistic learning experience in a bid to produce graduates with not only good grades, but with competent skills to thrive in the competitive job market. This can be evidenced by the University's continuous support of the Robotics club and other clubs. The main role of the club was to develop robots capable of competing in the National Robotics contest. From my second year of study, I was an active member of the club and a chairperson in my 4th year. Participation in the robotics club allowed me to harness and polish my skills in electronic design, embedded systems programming, PCB layout and design. These skills were constantly put to the test throughout the process of conceptualizing, designing, planning and building robots. This experience allowed me to actualize what I had learnt in class.

Currently, I am an intern in one of the fastest growing tech companies in Kenya, BRCK. During my interview, I recall the interviewer coming into the room with a PCB in hand and asked me to point out the components of the PCB and what I thought it was designed for. Due to the knowledge and experience gained in designing and fabricating PCBs, the interview was a walk in the park. The interviewer was impressed by my responses and granted me the opportunity to be a part of the company as an intern. This goes to demonstrate that the industry has changed; people are being hired on merit of their skills rather than their grades. 2 out of the 4 hardware engineers in the engineering department at BRCK are former students of Dedan Kimathi University; this alone should be proof of the academic quality provided by the University.

My advice to current and prospective students is to utilize the vast array of resources at your disposal; from the labs equipped with the latest learning equipment to the lecturers to your classmates, in an effort to ensure that you make the most out of your learning experience. For those who are interested in coding or designing PCBs, this is the right time and Kimathi offers the right environment for you to take your first steps.



Cyrus Kiiru
Graduand,
B. Sc Mechatronics Engineering

UNIVERSITY OF TECHNOLOGY:
DEDUCTIVE AND INDUCTIVE ARGUMENTS



By definition a university is an educational institution comprising of a variety of disciplines, people, colleges as well as institutes of higher learning. A university is a universal entity and at times accommodates scholars of different background with varied ideas and from one extreme to another. It is expected that a University not only introduces a learner to the discipline one has been called to but gives them the opportunity to learn about others through an interdisciplinary approach in what is commonly referred to as University common units. Hence a university will include all areas of human operation from science to humanities and arts to social sciences. This is the meaning of a university and Dedan Kimathi University of Technology (DeKUT) is not exceptional as its programs fit within the above category from the school of Business Management and Economics to Engineering, Sciences to Computing to institutes and so on and so forth.

As a university, DeKUT's alignment is towards technology. This being the orientation, this university must equip herself with the necessary tools thus qualifying to be the "mother" of technologies not only around Nyeri but in the region and the world at large. This will be in agreement with its motto "Better Life through Technology." If this is to be achieved, there is a need to apply both deductive reasoning as well as inductive arguments in all areas of operation. This means that for a university to continue operating epistemological and empirical approaches to reality is required, that is, reason and observable facts must be in place. This balance has been evident at DeKUT. Deductive and inductive arguments

Students have been taught how to distinguish inductive from deductive reasoning in an introductory course in Philosophy. These two forms of reasoning belong to both analytical and logical reasoning. It is in deductive reasoning that abstraction and hypothetical thinking is presented. Hence any conclusion arrived at or inference from deductive reasoning is said to be certain, correct and valid. This article will therefore apply deduction reasoning to reach to a valid, correct and truthful conclusion about DeKUT as a university of choice in all areas of technology. This is because deductive reasoning or argument is based on logic and is assumed to be true and certain. For instance, DeKUT has the best laboratories in the region. This can easily be ascertained by visiting various laboratories and assessing their operational status. Another instance, DeKUT grows the best coffee berries which the Institute of Food and Bio-resources processes. Additionally, the Institute of Tourism and Hospitality trains and produces excellent graduands working in many hotels in Kenya. Further DeKUT nursing programmme is the best in the region. This is a fact and many visitors who have been to this university have been able to state this as a true and certain fact.

Introduction to Philosophy also teaches students to argue inductively as a result of observations done on a specific

event. Having been a member of staff and also Dean School of Business Management and Economics, I can testify that there are some observable events which make Kimathi unique and appropriately so in areas of science and technology. Both the undergraduate and postgraduate programmes in security and management have contributed greatly in training and equipping many security officers particularly in forensics, cyber and crime prevention in the region. A number of these officers are now engaged even in the corporate world where they provide excellent and advance security services. DeKUT therefore has a conducive learning environment and there are very high number of qualified staff and students who empower learners to achieve their expectations.

This article has therefore relied on some inductive arguments or basically probable reasoning which are also refutable when one is yet to accomplish the cause of action. This is because observable events can change with time and are basically probable in nature. Hence there has to be a balance between deductive and inductive arguments. This article has therefore been able locate DeKUT within the spectrum of global universities of technology, a university that can change and transform Nyeri into a university city. For instance and since the university cannot accommodate all of its students, private developers have been able to construct hostels and residences for the students thus opening-up Nyeri to become a vibrant almost 24 hour town.

DeKUT challenges her students as well as members of staff to become agents of change. Many seminars, workshops and conferences have been held to bring this approach into fruition. Observably one can easily conclude that DeKUT is really a place to be for both the staff and the students thus emphasizing her motto "Better Life through Technology."

Better Life through Technology

DeKUT's motto of 'Better life through Technology' is unique and measurable (or can be quantified). Through this article, one can assess whether DeKUT has lived up to her motto through the inductive and deductive methodology. Projecting DeKUT from a glance one can easily conclude that it is really a university of technology. This is observable from the many projects that both the schools and the institutes have been carrying out. For example robotic science, spatial and remote sensing, drone and information technology in areas of security, tourism, hospitality as well as in business and entrepreneurship skills. Students and staff have had opportunities to participate in both local and international conferences. Recently the University has been challenged by the Kenya government to start a Science and Technology Park which will house all the schools and institutes. Due to her uniqueness, DeKUT remains a university of choice for all and therefore her contribution in areas of technology must be seen to be of the highest quality. This must be evident through the students graduating from here: they must be a team of alumni whose character is above board. Deductively one can easily say that DeKUT alumni will be people who will transform not only Kenya but the world at large. Inductively all graduands whether from the schools of Business, Science, Engineering or even from any of the DeKUT's institutes will be expected to be unique at any given point in life. This is because "Better Life throughTechnology" is a holistic motto and does not isolate any particular learner: this motto challenges one to be as human as one can be regardless of his/her knowledge, innovation or technological approaches to the world event. Deductively, DeKUT is a university and home not only to the region but also globally. Inductively, DeKUT is the University to watch and with the proposed Science and Technology Park, it is the place to be.

Prof. Theuri Matthew M., PhD., DD
(Dean, School of Business Management and Economics)



SIEMENS MECHATRONICS SYSTEM CERTIFICATION PROGRAM (SMSCP)

INTRODUCTION

The Siemens Mechatronic Systems Certification Program (SMSCP) is one among the many international programs offered by Siemens Technik Akademie Berlin, an elite international technical college wholly owned and operated by Siemens. The Siemens Mechatronic Systems Certification Program is the international industry standard comprehensive skills certification in mechatronic systems offered together with partner schools worldwide. The training is conducted by the partner institutions while the examination and certification is handled by Siemens Berlin. Fig.1 shows the Mechatronic system the Siemens Training Center is using during the training.



Fig. 1 SMSCP training system in Mechatronic lab

SMSCP's technical content focuses on key industrial skill areas, such as electrical components, sensors, motor controls, PLCs, hydraulics and pneumatics. In addition to teaching the technical knowledge, SMSCP stresses trouble-shooting and system-based technical thinking via hands-on training. This technical training, paired with our degree programme will create well-grounded workers that can easily meet the challenges of high tech and advanced manufacturing industries. Dedan Kimathi University of technology is very proud of this partnership with Siemens, as the first in Africa, to enhance her training in Mechatronic Engineering.

This exciting new collaboration was started by organizing a successful Level 1 & 2 Instructor Certification course that was held at Siemens Technik Akademie Berlin (October 4-28, 2016) where one instructor was trained. The institution hopes to send another instructor for this training in July 2017.

Benefits of the program

- Opportunity to acquire a world-class industry certification in mechatronic systems without disrupting your normal studies.
- Extra advantage over the competition on the job market.
- The SMSCP is designed to complement and fit into existing programs of study, not replace them hence students can receive both an industry certification and a university degree.
- Flexible implementation possibilities, for example: evening, weekend, full time, etc.

1ST INTAKE

The first class of 21 students of SMSCP was admitted in January 2017. This group has already completed the training (Fig.2) and we are in the process of booking for their exam.



Fig.2 SMSCP Training of 1st Cohort

SECOND INTAKE

After successfully training the first batch of 21 students, we are now focusing on the second intake. We have already received 21 applicants from KENGEN who have expressed their interest to train in this programme.



Fig.3 shows the SMSCP presentation to KENGEN staff in Olkaria.

Fig.4 Siemens training center coordinator making a presentation about the program to KENGEN staff

PORTABLE SMSCP SYSTEM

The program has attracted personnel from the industry thus creating the need for a portable system. The University is therefore in the process of acquiring a portable mechatronics training system from AMATROL which can be transported with ease (Fig.5).

Fig.5 AMATROL portable mechatronics training system



Amatrol's Tabletop Mechatronics is a portable, durable, affordable learning system that forms a fully automated line to teach real-world mechatronics skills. This learning system features a pick-and-place, gauging, and inventory station, all of which fit on a standard tabletop.

Each mechatronics station includes a PLC control unit that features an AB1000 PLC, 10 inputs, 6 outputs and much more. These stations also include I/O training simulators with push buttons, selector switches, and output indicators so that learners can program and operate the PLC before moving actuators on the station.

Dr. Eng. J.B. Byiringiro Nubashyimfura
Siemens Training Coordinator

INNOVATION, INTROSPECTION AND GLOBAL FOCUS, THE WAY TOWARDS GROWTH FOR AFRICAN UNIVERSITIES

Contemporary times have brought about globalisation where markets are open and information flows freely across borders, thanks to the internet. The world is no longer split between East and West or first and third worlds at least when it comes to communication and the flow of information and access to it. Furthermore, no single country is a monopoly of knowledge and technology. Knowledge and technologies are spreading faster than state leaders can say "internet". Knowledge that is relevant today can be rendered irrelevant within a span of hours once it spreads across the globe and further research is done on it. Technology that is relevant today can be rendered obsolete tomorrow.

Thanks to this upset in the status quo, Africa is no longer the "Dark Continent" as it used to be labelled. A lot of innovation is happening in the continent and most of it is spearheaded by Universities. Mpesa which took the world by storm as the first of its kind mobile money transfer system is an innovation that was designed by a Kenyan innovator to solve a Kenyan problem. More innovations are designed everyday by youthful African innovators who reside primarily in universities across Africa. This marks a shift from the importation of solutions from outside the continent towards home-grown solutions for our problems. It's about time that universities embraced this spirit of innovation and harnessed it to capture a niche for them in the global platform. But most importantly these universities must learn to have a dominant presence in the digital platform. These innovations should ideally be accessible on the internet to encourage critiques that spur reengineering and redesigning meant to improve usability of these innovations but within reasonable parameters to avoid infringement of copyright and intellectual property. It is observed that companies tend to grow and make more profits once they sell their products to foreign countries. Universities also have a mandate to make profit in order to retain relevancy and to facilitate teaching and research. As the world's focus shifts towards innovations that are relevant to the rest of the world such as renewable energy, African Universities have the opportunity to take advantage of this shift and position themselves as hubs for innovations for global problems.

DeKUT is one step ahead in this race and has already begun shifting its focus towards supporting innovation. DeHUB, which is an incubation hub for innovations, was set up in 2015 specifically to address the needs of start ups which dealt with innovations. It is the first of its kind incubation hub outside of Nairobi. Further, the setting up of a Science Park in its premises, which is already on course, has come at a very opportune time for the university as it strives to achieve global excellence in research and innovation. The science park offers the university and its faculty an opportunity to lead in the race towards growth and international relevancy.

Faith Mutheu

UNDERSTANDING THE INTERNET OF THINGS

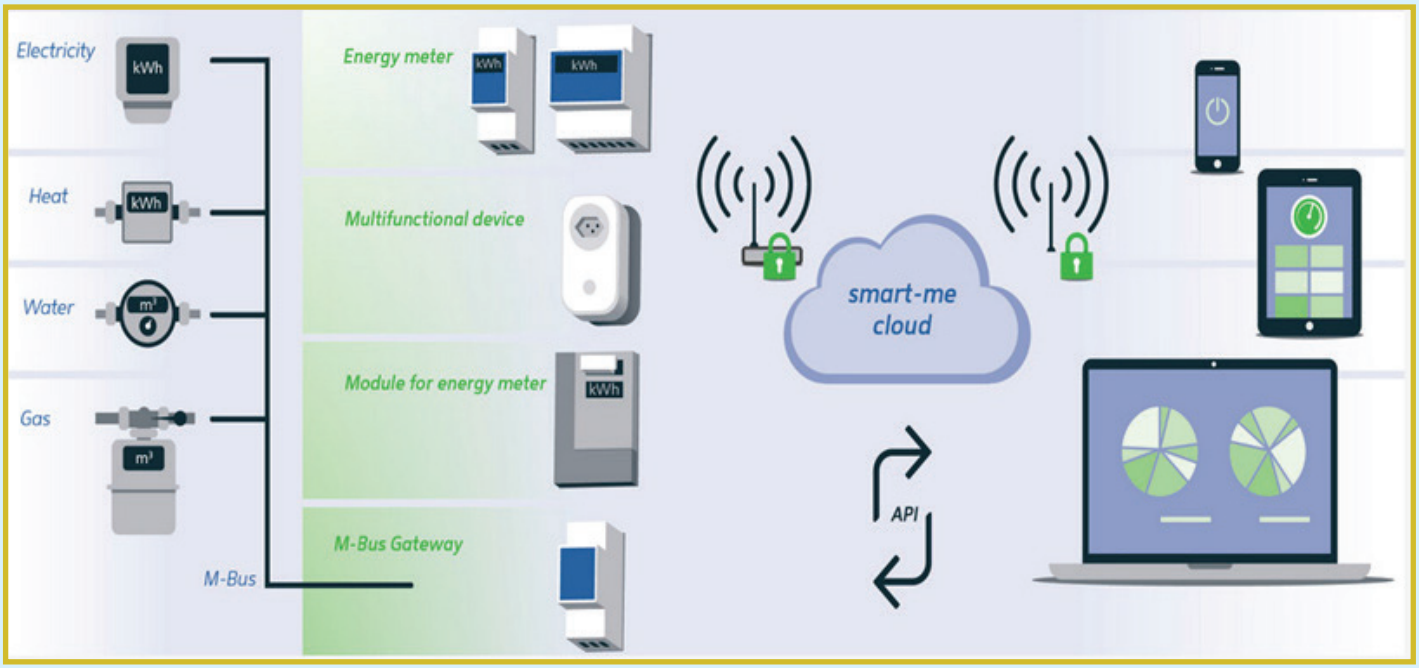


Figure 1. How smart-me works (Smartme.com)

Supposed you walked into a lecture room in campus and from your smart phone received information about the room's identification, humidity and temperature including classes schedule for the day or week and details about a lecture class, lecturer and class time. Such is the world of smart objects and devices; from smart classrooms, smart metres to smart traffic lights. A smart device essentially is a gadget capable of connecting and sending data over a communication network, usually the Internet. At the heart of this smart revolution is a new technology paradigm that is enabling us to connect ordinary items to the Internet in a scale that is unprecedented. The Internet of Things (IoT) is this new trend and is the foundation for advanced services in sectors such as agriculture, healthcare, manufacturing, transportation and many more. IoT has also been associated with the phenomenal rise in the number of devices connected to the Internet, and by 2017 the estimated number of internet connected devices and "things" was more than 20 billion.

Generally, IoT encompasses a range of technologies that embed sensors and communication technologies in materials of daily life. IoT is a system of interconnected computing devices, digital and mechanical machines, people or other objects that are provided with IP addresses and ability to send data over the Internet. An IP address is a unique identifier that enables a device to send data over a network. The transition from the old IP version 4 to the new IP version 6, which has practically an unlimited number of unique addresses, has been one of the technology trends driving the use of IoT. In addition, rise in big data analytics, cloud computing and ubiquity of wireless computing are other factors contributing to the rise of IoT. New algorithms are being used to analyse torrents of vast amounts of data generated by connected devices whereas cloud computing, which relies on the networked computing resources, provides powerful back-end analytic and control capabilities. Considering the miniature size of some objects in the IoT, various forms of wireless technologies – such as WiFi, Bluetooth and Z-wave – are being used to establish connectivity in device-to-device or device-to-cloud communication models. Key sectors in the industry are using IoT in the following ways:

Energy

Energy utility firms are implementing smart grids, which rely on smart metres, to improve efficiency of transmission and increase reliability of supply. Smart metres are equipped with sensors that track and monitor information on energy usage. This information, which is relayed to a central system, is then used to address outages and encourage conservation through demand-based pricing. For consumers, a smart metre service such as smart-me can be used to monitor energy usage, turn off unused household devices, and control ventilation systems from a smartphone or tablet.

Agriculture

Farmers are able to collect data about their crops and livestock in different ways in order to increase their yields. Nelion Farm, a product created by DeKUT students in the DeHUB, is one such technology which allows farmers to monitor and control greenhouse conditions such has humidity, soil pH etc. from a smart device such as a phone or tablet. A Dutch company called Sparked has created a sensor implant that can measure a cow's vital signs, with the information transmitted to a farmer, who can then right way determine the health of his herd and respond when the animal is sick or pregnant.

Healthcare: IoT is being used to provide personalized and improved healthcare services to patients. One of the main IoT intervention areas is through use of sensors placed on health

monitoring equipment or implanted in patients that capture information about a patient's vital signs. This information is then made available via the Internet to doctors, improving response time and overall patient care. Other areas of use relate to service support and maintenance for medical equipment. For example, MRI machines connected to the Internet can allow hospital staff to get alerts when the machine malfunctions or is due for service.

Manufacturing

Applications of IoT in manufacturing address the need to improve efficiency in the manufacturing process as well as control and monitoring of industrial equipment. IoT is stirring a revolution of highly automated production centres where sensors used in machines can be used to capture and automatically send information about a production line, reducing or eliminating the need for human inspectors to undertake quality checks or audits.

Transport

Modern cities face challenges in traffic management as more and more people migrate to urban centres. In Nairobi, millions of shillings are estimated to be lost every day as a result of congestion on the roads. In partnership with the county government, IBM developed an IoT based solution to enable garbage collection trucks plan more efficient routes. The vehicles are fitted with mobile phone trackers that monitor their movement, enabling fleet supervisors monitor data on location and speed in real time. This means that supervisors become aware of problems on the roads as soon as drivers experienced them and thus make alternative plans. Traffic management has been enhanced in other cities such as Barcelona which has implemented a sensor system that guides motorist to available parking spaces.

In conclusion, influenced by the need to introduce advanced services, greater focus on improvement of operational efficiency and decline in cost of sensors, IoT will continue to have a greater impact on the society. It is imperative, therefore, for aspiring professionals and industry players alike to be adequately informed about the emerging trends in IoT and the opportunities it presents.

Anthony Maina,
Chairman, Department of Information Technology

DeKUT USHERS IN A NEW UNIVERSITY COUNCIL



DeKUT's Second University Council

DeKUT ushered in a new University Council on 3rd April 2017 in a glamorous swearing in ceremony which took place at the university. The council which consists of experienced professionals drawn from various sectors of the industry will serve as the second University Council since its award of Charter in December, 2012. It's composition is Dr. Jane Nyakang'o as the Council Chairperson, Dr. Janet Kabeberi Macharia, Mr. Raphael Anampiu, Prof. Ruthie C. Rono, Eng. John Kisenga, Prof. Eng. P.N. Kioni, Mr. James Kiburi representing PS MoEST, Mr. Joseph Kairie Representing PS National Treasury. The council is charged with oversight and policy formulation.

The chancellor expressed pleasure at the inauguration of the second council. He congratulated the new chair, Dr. Nyakang'o for being the first lady chair since the institutions inception in 1972 as Kimathi Institute of Technology. The Chair Dr Nyakang'o stated that the team was set with deep connections and great expertise in education, engineering, banking, technology among others. She expressed her hope to have DeKUTs programmes poised to be among the best in the world, to have DeKUT's status in higher education enhanced. She also expressed her hope to see the faculty doing the best work and to see that they are linked up with excellent colleagues and facilities. Her sentiments were supported by the council members who expressed their pride in being part of the DeKUT dream and intention to leave a unique mark on the university owing to their unique backgrounds. They expressed their hope to achieve a lot more in a short period. The new members went on a tour of the university, its various facilities, farm and the conservancy. They got to see the great developments that have taken place at the university since its award of charter in 2012. At the farm, the council members got the opportunity to plant coffee trees with the hope that they would have a taste of the coffee from the coffee beans in a few years time.

Faith Mutheu



One of the innovators demonstrating his application's function to the then CS. for ICT Dr. Fred Matiang'i, he is currently the CS. for Education.

DeHUB, AN INNOVATORS SPACE AT DeKUT

It is practically two years since Dedan Kimathi University of Technology Innovation and Incubation Centre (DeHUB) was launched and a lot has happened in the intervening period. A remarkable growth in the number of DeKUT students and faculty engaged in innovative and entrepreneurial activities has been observed at DeHUB. Within the two years of its existence, DeHUB has taken in over fifty innovation undertakings from DeKUT students, faculty and alumni, some of which have grown into start-up ventures. The students have showcased a rare creative talent and innovative genius in various domains including agriculture, health, entertainment, security and digital payments. The regular articles featured in our local dailies attest to this.

In addition to the incubation program, DeHUB has also played host to numerous tech events with the aim of engendering a creative environment for the hub members who are now more than five hundred. Two of the highlight events were DeHUB Kenya Hack 2016 and DeKUT X-Fair 2016. DeHUB Kenya Hack 2016 was held from 27th to 29th May, 2016. Sixty participants drawn from various universities in Kenya attended the event with nine teams competing for prizes which were up for grabs. On the other hand, DeKUT X-FAIR 2016 was a three-day event held from 11th to 13th November 2016 at DeKUT. The main sponsors of the event were DeKUT, Nyeri Water and Sewerage Company (NYEWASCO), Google and Intel. About two hundred members from five different institutions participated in two concurrent sessions: 48hrs Hackathon and DevFest 2016. Eleven teams competed for the top positions that were awarded prizes, with the winning team walking away with KES. 25, 000 while the first runners-up and second runners-up got KES. 15, 000 and

KES. 10, 000 respectively.These events continue to provide opportunity for generation of ideas and new ways to solve various societal challenges through application of IT.


DeHUB Kenya Hack (27th - 29th May, 2016) Group Photo

In the course of last year,DeHUB received many visitors. We were honoured to receive a visit from ICT Cabinet Secretary Hon. Joe Mucheru in early September, 2016. Hon. Mucheru discussed with the Vice Chancellor on how DeHUB can be scaled up in order to accelerate the translation of more students' innovations into successful ventures. The Cabinet Secretary is currently working with one of the most promising innovators group that caught his attention, Nelion Farm, on the possibility of applying their developed greenhouse technology in neighbouring greenhouses in Chaka, Nyeri. This group of innovators has created a stress-free management model for green houses through IT automation which can be controlled from the comfort of an office via hand held devices such as smart phones and tablets.

In conclusion, DeHUB continues to be at the forefront of fostering team-based innovative and entrepreneurial activities among DeKUT students, faculty, alumni and the community at large. DeHUB remains steadfast in keeping pace with the innovative world as well as setting new trends to be emulated. We look to the future with clear-eyed confidence and heartfelt determination at this extraordinary point in the arc of history.
As we celebrate the sixth graduation ceremony, I congratulate all the graduands, on behalf of the DeHUB team, and wish them fulfilling and innovative careers ahead.



ICT Cabinet Secretary, Hon. Joe Mucheru and DeKUT Vice Chancellor, Prof. P. Ndirangu Kioni listening to a presentation by Nelion Farm team, Denzel Wamburu and Muriungi Kithinji (3rd year, Mechatronics Engineering students) on 9th September, 2016.

By Mr. Augustus Kamau,
Coordinator, DeHUB

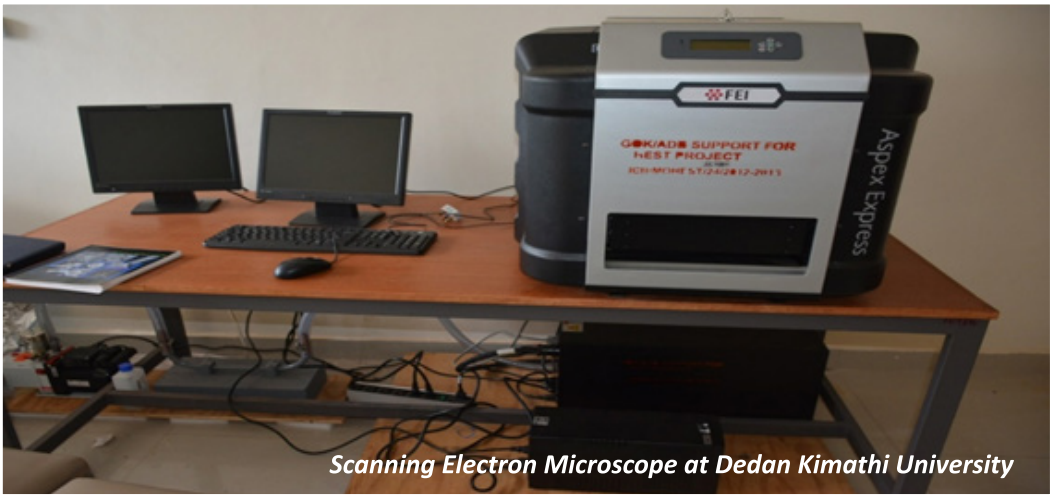
UNIQUE PROGRAMS IN THE DEPARTMENT OF CHEMISTRY



The department of Chemistry plays host to two very unique programs in applied sciences namely BSc. in Leather Technology and BSc. in Industrial Chemistry. Being the first university to offer BSc. in Leather Technology, it is one of its kind in the country and releases to the market some very qualified individuals in this technical field. Students who have gone through this program have acquired skills in Footwear manufacture, Leather goods manufacture, tannery engineering among others. They have learnt from highly experienced personnel both locally and from abroad as evidenced in the following paragraph. A good number of them have already secured employment in various companies while we hope those that top in their class join graduate school to further their studies. We want to lead the way in this area developing skilled manpower for our beloved country.

Owing to the lack of personnel to spearhead this program in the country, DeKUT has partnered with universities and dons across the world to build capacity and nurture our very own talent in this area. In July-August 2015 we played host to Prof. Karthikeyan Rajan from the University of Addis Ababa. Prof. Rajan traversed DeKUT imparting knowledge to our students in Biotechnology of Leather Manufacture and Post- Tanning processes. More recently, in September 2016, we received two visiting professors in the same area from Sudan; Dr. Sheikheldeen Bushra Ali (Sudan University of Science & Technology) and Prof. Ali Musa (ASLTC) University of Bahri – Khartoum, Sudan. The two professors taught several courses including Eco-Benign Options for Leather Processing, Science & Technology of Leather Auxiliaries, Physical Testing of Leather and Exotic Leather & Products Manufacture. These exchanges have greatly enriched the leather technology

program and MOUs with the two Sudan universities are underway to strengthen the partnership. Apart from the exchanges, the University recently hired a highly skilled lecturer from Anna University India to spearhead specialized courses in footwear and leather goods. The University is also sending one of our own member of staff for a PhD in Leather Technology at Anna University which is a leading university in the world in Leather Technology based in India. This capacity building among others is aimed at propelling this important area to prominence in the country. Furthermore, this program is one of the flagship programs aimed at achieving Kenya's development goals in line with vision 2030. Today, we graduate the first lot of BSc. Leather Technology. We are also launching a Master's Program in Leather Technology this year.



Scanning Electron Microscope at Dedan Kimathi University

Students in the BSc Leather Technology program benefit from industrial exchanges owing from their numerous trips to various industries in the country.

BSc. Industrial Chemistry is not left behind either. Our students are exposed to hands on activities in this highly practical subject with great opportunities in the industry. In the past few years, we have had our students attached to various industries and the reports from these industries regarding our students' practical skills, knowledge and discipline have been quite encouraging. This year we commission a brand new chemistry laboratory to serve this program and have no doubt we are on track in upping our training as well as providing the best facilities for our students. A unique equipment which we boast of having in the University is the Scanning Electron Microscope which is quite useful in carrying out cutting edge research in nanotechnology. This has enabled us attract very qualified PhD bearers in the department and we have no doubt cutting edge research will emanate from these researchers. Today we graduate the second group of BSc. Industrial Chemistry and hope to launch a Masters in Chemistry within the year. We have designed the program to be a unique one in Kenya as we draw from our highly diverse members of staff educated in the USA, China, India and South Africa. This diversity has been a great strength to the chemistry Department.


Students being taken through the various tanning processes at Sagana Tanners

While 2016 was a great year in the Chemistry Department, 2017 portends to be a greater year as we venture into the aforementioned graduate programs in Chemistry and Leather Technology. Being a premier university in Kenya, we envision leading the way in developing local talent in this untapped area to propel the Leather Industry to where it should be globally particularly in value addition thus moving the country a step further from trading in raw hides and skins.

Dr. Paul Sang, PhD.
CoD Chemistry

SUSTAINABLE COFFEE PRODUCTION:
COFFEE PULP AS A POTENTIAL SOURCE OF PECTIN



The major focus in coffee production is to obtain high quality green beans and consequently a good cup quality. But, what happens to the by-products of coffee production? Among these are the pulp (constitutes approximately 40% of the red ripe cherry), waste water (of high levels BOD and COD) released to water bodies after wet processing, the mucilage and hull etc. The disposal of these materials poses a major challenge to the environment, both the land and the water bodies. Therefore, in many coffee producing areas, pollution of soil and water could be of a considerable magnitude. In seeking to attain sustainable coffee production, increasing profitability through higher yields and better quality beans, could the by-products of coffee processing be put into a better use? This could go a long way in reducing the environmental pollution. The by-products could probably be used in production of food and feed additives as well as energy production, although effecting the same would yield certain challenges. To this end, an ongoing research at the Institute of Food and Bioresources Technology, DeKUT, Kenya, in collaboration with Laboratory of Food Technology, KU Leuven, Belgium, with financial support by the Coimbra Group Scholarship for Young African Researchers, aims at getting an insight into the potential of utilization of pectin from coffee pulp as a food additive.

Pectin is the traditional gelling agent for jams and jellies, but its application extends to fruit products for the food industry, dairy products, desserts, soft drinks and pharmaceuticals. It is a complex polysaccharide generally consisting of three domains i.e. homogalacturonan, rhamnogalacturonan I and rhamnogalacturonan II. Homogalacturonan is a linear homopolymer consisting of (1→4)-α-linked-D-galacturonic acid and is the major pectic polysaccharide. On one hand, rhamnogalacturonan I is a pectic domain consisting of as many as 100 repeats of the disaccharide (1→2)-α-L-rhamnose-(1→4)-α-D-galacturonic acid.On the other hand, rhamnogalacturonan II is a highly complex macromolecule with a (1→4)-linked α-D-galacturonan backbone, partially methylesterified at C-6 of GalA residues and substituted by four hetero-oligomeric side chains.

Industrial pectin is mainly produced from citrus and apple peels. However, other waste streams of vegetables and fruits production contains varied amounts, albeit not in large quantities. Therefore, coffee pulp was considered as a possible potential source of pectin. Using the state of the art technology, pectin will be extracted from coffee pulp of the three coffee varieties at DeKUT Coffee Farm i.e. Ruiru 11, Batian and SL 28, followed by structural and chemical characterization of the pectic polysaccharides contained in the isolated Alcohol Insoluble Residues. The process of characterization entails determination of (1) the degree of methoxylation (galacturonic acid and methyl groups)and acetylation (galactruronic acid and acetyl groups)by spectrophotometry, (2) neutral sugarscontent by High-Performance Anion Exchange Chromatography using Dionex system combined with Pulsed Amperometric Detection, and (3) molar mass distributionusing High Performance Size Exclusion Chromatography coupled to Multi Angle Light Scattering, Refractive Index Detection and Diode Array Detector.

Based on the findings, the quantity and quality of the coffee pulp pectin will be revealed, which ultimately influences its functionality either as a gelling, stabilizing or emulsifying agent in food products.

Njoroge DM.
Lecturer IFBT

DeKUT PARTNERS IN RESEARCH WITH TECHNICAL UNIVERSITY OF APPLIED SCIENCES (TUAS), WILDAU

Through a collaboration between TUAS, Wildau and Dedan Kimathi University of Technology, Chuaga Kinuthia conducted part of his Msc. Food Science and Technology lab work at the Molecular Biotechnology and Functional Genomics department between September and December 2016.

During his research, he was working with the Liquid Chromatograph Mass Spectrophotometer (LC-MS) to analyze biochemical components in different Kenyan coffee classifications. He also worked with the Gas Chromatograph Mass Spectrophotometer (GCMS) to profile flavour components in the Kenyan coffee classifications.



Chuaga Kinuthia working with the LCMS

The biochemicals of interest during the research were caffeine, trigonelline, chlorogenic acids and sucrose. Caffeine, trigonelline and sucrose were found to be negatively correlated.

That is, their concentration in lower quality coffee was low as compared to the higher ones. Chlorogenic acids were positively correlated as their concentration in lower quality coffee was lower as compared to the higher ones.

DeKUT'S FUNDING FROM VLIR - BELGIUM BEARS FRUITS

DeKUT made a milestone achievement by winning funding from Belgium's Flemish Inter University Council (VLIR-UOS) for teaching and research enhancement in Post Graduate Engineering programs. The project,titled, "Capacity enhancement for teaching, research and extension for management of critical medical devices at public hospitals in Kenya", is spearheaded by Prof. Peter Muchiri (School of Engineeringin DeKUT) and Prof.ir.Liliane Pintelon (University of Leuven in Belgium). The project funding was launched by VLIR-UOS in August 2016in Belgium and witnessedby the Vice Chancellor of DeKUT, Prof. P. N. Kioniin collaboration with the University of Leuven and the implementation started soon afterwards.



Figure 1: The Fully installed computer lab in DeKUT's Nairobi Campus, funded by VLIR-OUS of Belgium

To enhance quality research, teaching and knowledge transfer, the VLIR project started by implementing a state of the art Computer Laboratory for Post Graduate students. The Computer lab, shown in the photo below, was fully installed in January 2017 in DeKUT Nairobi Campus, where most of the Post Graduate students are located. The Computer Lab consists ofa Projector and 38 N-Computing Work stations, powered by high specifications processing units, to support video conferencing from University of Leuven, computer modelling, simulation, data analysis and other heavy software application required in Post Graduate research. This will go a long way in improving the quality of teaching and enhance DeKUT's position as a University of Technology in the Country.

Through the VLIR funding, DeKUT in collaboration with The University of Leuven, conducted a two-day capacity building workshop for Medical and Engineering staff on the asset management of health care equipment on 20th and 21st December 2016 in Nyeri. The key speakers were Prof. Walter Sermeus and Prof. Liliane Pintelon from University of Leuven, Belgium and Prof. Peter Muchiri of DeKUT. The workshop brought together a multi-disciplinary team of stakeholders in the medical profession, comprising of Medical Superintendents, Biomedical Engineers and Nurses from seven hospitals in four Counties in the Greater Mt. Kenya region namely; Nyeri, Kirinyaga, Laikipia, Nyandarua Counties. The Nyeri County Government was represented by the Director, of Medical Services while DeKUT Staff were drawn from the School of Engineering, School of Health Sciences (Nursing Department) and Medical staff.



Figure 2: Workshop on capacity enhancement for teaching& research extension for management of critical medical devices at DeKUT, attended by staff from 7 County Hospitals, DeKut Staff& Masters students, Nyeri County Director of Health, Deputy Vice Chancellor-Academic affairs, Prof. G. Muthakia and Prof. Walter Sermeus of University of Leuven, Belgium

The key outcomes through the Workshop were:

a) Capacity Building of Medical staff in the County Hospitals
b) Knowledge and Technology Transfer from Belgium to Kenya
c) Creating a forum of Linkages with County Hospitals
d) Development of a collaboration platform for further training, research, capacity building and new curriculum development in the area of Biomedical Engineering, which the University plans tolaunch in the near future.

Other key outcomes of the collaboration is a 4 years PhD scholarship to a staff in Mechanical Engineering department of DeKUT in the University of Leuven, which commenced in October 2016 till September 2020. Further, 3 Masters students in Industrial Engineering are conducting research in County Hospitals, as part of their Masters Thesis to address the various Biomedical challenges faced by the Kenyan hospitals. The research is supervised by Professors in both DeKUT and University of Belgium.The project is therefore a good achievement for DeKUT to enhance international collaboration, linkages, knowledge and Technology transfer for the benefit of the University.



Prof. Peter N. Muchiri
(PhD, Mechanical Engineering, KU Leuven),
DeKUT's project coordinator

UNIVERSITY FARM COFFEE SEEDLINGS NURSERY



Photos of coffee nursery

The University farm has been engaged in high quality coffee seedlings propagation from the year 2012. In November 2014 the farm received funding to further develop and modernize the coffee nursery from the European Union through Coffee Research Institute under the Coffee Productivity Project (CPP). The funding was to a tune of KES. 2,980,000 excluding DeKUT's contribution of KES. 670,000.

Objective of the CPP

The Overall objective of the Coffee Productivity Project (CPP) is to increase coffee production in Kenya through capacity building in both the traditional and non-traditional coffee growing counties. This ensures that high quality coffee seedlings are propagated and availed directly to farmers, coffee cooperative societies or any other consumers.



Photos of coffee nursery



Varieties of seedlings produced

The varieties being propagated in the nursery are grafted Ruiru 11 and Batian coffee seedlings.

Cost of seedlings

The coffee seedlings are on sale at the DeKUT farm at a subsidized rate of KES. 20.

Coffee sales

Farmers

From July 2016, a total of 41,039 coffee seedlings have been sold to farmers in Nyeri, Kirinyaga and Laikipia counties. The sale is open to anyone in need of high quality coffee seedlings.

Production

The total number of coffee seedlings produced since inception of the CPP in 2015 is 171,591. Currently 77,969 high quality coffee seedlings are available for sale.

OFFICE OF THE FARM MANAGER
CELL PHONE: 0701782823
farm@dkuat.ac.ke

ACQUIRING HANDS ON EXPERIENCE IN CRIMINOLOGY & SECURITY MANAGEMENT

Our Motto:



Before graduating in BSC Criminology and Security Management, students are exposed to practical trainings at Our Nairobi Town Campus Demonstration room and HPSS training facility.



Nairobi Town Campus Demonstration RoomHPSS Training Facility

The three types of intensive practical's our students have undergone meant to expose them to real time incidences are:

- **The emergency first aid,**
- **The Improvised Explosive Devices exposure**
- **The active shooter training**
- **Hostile environment training**

The Emergency Management Training

The training is facilitated by St. John's Ambulance (K). The training targets students in the 3rd year of study, second semester. The training is meant to enhance the students' skills in safety and responses in the field of crime scene management, fire and safety, emergency management and incident command. The scope covers themes in: basic principles of First Aid, respiratory problems, heart and circulatory problems, wounds and burns, injuries to bones, joints and muscles. Other themes in responses to medical emergencies like choke hiccups, panic attacks, allergies and effects of heat and cold.



The Improvised Explosive Devices Training

Improvised Explosive Devices (IEDs) are explosive devices used by terrorists and suicide bombers to cause destruction to property, kill, maim or harass terrorists' victims and bystanders. IEDs are also explosives manufactured, designed and employed in contraventions to the manufactures specifications. IEDs have evolved to be a weapon of choice for the terrorists.While IEDs are sometimes described as recently evolved, it actually has an old history, with the new version of IEDs having the capability to pierce armour coming into operations in 1945.IEDs today have proved as an effective weapon against soft military targets such as trucks, foot patrols and civilians. The risk of IEDs is projected to remain and rather than the threat de-escalating, it continues to proliferate. It is an enduring threat that requires enduring capability to counter it, with an increasing difficult balance-of –cost problems. Similarly, the technology of making IEDs is becoming sophisticated and dynamic and counter measures requires to be designed for both rural and urban set up.

The training acquaints students with the emerging threats in the 21st century. The training targets all students in the fourth years of study who are in areas of specialization in cyber security, forensics and security management. The training takes one day at HPSS with the scope covering broad themes in IEDs design, recognition and counter IEDs.

Our Students in Session: January to April 2017



Lower Limb fracture management



The upper Limb fracture management



The Choke management

The training is geared to prepare the student to disable the active shooter

Run - The purpose of this skill based training is to develop trainees to seize initiative and escape from the vicinity of the active shhoter. The option is viable when there is an existence of escape route or means to escape. During the escape, it is advisable to wear comfortable shoes and dress. It is also advisable to avoid carrying bulky luggage while escaping. An effort should be made to escape into safe sanctuaries.

Hide - The purpose of the drill is to encourage the potential targets for active shooters to remain in hiding and out of view of the shooter. The trainees are encouraged to minimize any movement in the hide as well as avoid making any noise, phone or raise an alarm that can attract the attention of the active shooter.

The Effects of IEDs (Source: HPSS IED Training Manual)





Our Students in action for hijackings and kidnappings ordeals

The Active Shooter Training

Active shooters are the types of criminals/terrorists who purposely shoot to kill as many people as possible in confined places. Active shooters do so for a number of reasons . This method of accomplishing terrorism is now a common method in 21st century. It is designed to cause mass casualties to the target population. The training is geared to prepare students on how to respond to an encounter with an active shooter. The goal is to try to minimize casualties. There are three strategies recommended for dealing with an active shooter : **fight, run or hide**



Fight - The response is designed to aggresively fighting the active shooter by use of any available object through hitting or throwing objects to the active shooter. The goal is to incapacitate the active shooter





Donald W. Theuri (ColRtd)

STUDENT EXCHANGE EXPERIENCES IN GERMANY AND RWANDA



Student Exchange Experiences in Germany and Rwanda

I am a proud student of Dedan Kimathi University of Technology. Within the past 5 years of my studies, I have had a chance to participate in two student exchange programmes through which I gained most amazing and memorable experiences. The student exchange programmes took me to Paderborn, Germany and Musanze, Rwanda courtesy of IAESTE and AIESEC respectively.

On March 31st 2015, I had a chance to travel to a city in the eastern North Rhine-Westphalia of Germany called Paderborn. I was one among four students; Derrick Nandwa, Penina Wanjiru, and Anastacia Wangui from DeKUT who were selected for the exciting exchange.

I was stationed in the University of Paderborn where I joined the Mechatronics team and embarked on research work along with professionals in the line of engineering. I learnt a thing or two on how Germans do what they do to become the most technologically advanced country world-wide. I gathered technical experience on matters to do with Mechatronics engineering and experienced growth in professionalism. Going for the exchange undoubtedly provided good networks for me and put me in a position to become among the top candidates for desirable job opportunities.



On one weekend we got a chance to visit Paris, France. A global destination for art, fashion and culture; an astounding city indeed. We got to visit most of the popular tourist sites like the Eiffel Tour, Notre Dame de Paris, the Louvre, Arc de Triomphe, Sainte Chapelle among others. I also got a chance to visit major towns in Germany during my exchange period. During my stay, which lasted for three months, I interacted with a lot of friendly folks from different parts of the world. This made me view things from a different perspective while making lifelong friends.

Six months later, I got a chance to participate in another student exchange programme. In January 2016, I and two other DeKUT students; Ivy S. Sophie and Martin Munga went for a community-based voluntary student exchange programme in Musanze, Rwanda. We chose Rwanda because of our desire to impact on its endeavours to develop an entrepreneurial culture among students. After 24hrs on the road we arrived at Musanze and were welcomed by warm and enthusiastic interns to where was to be our home for the next six weeks. We were a total of approximately 20 interns from Kenya, Uganda, Tanzania, Nigeria and Spain.

We were stationed in the University of Rwanda, Busogo Campus-CAVM. The project, Micro-Enterprise Project, was a project running in three Rwandese Campuses: in Kigali, Musanze and Huye courtesy of AIESEC and other partnering companies in Rwanda such as Stryde, Mastercard Foundation, TECNOSERVE and Vision Finance. We were the facilitators of that project and our responsibility was to teach the university students.

During the weekends, we visited many interesting places such as Lake Kivu (which is Rwanda's biggest lake located at the Rwanda-DRC border), the Genocide Memorial in Kigali, the King's palace, the Presidential palace and had a little bit of adventure in the scenic Nyungwe forest. Being my first time in Rwanda I was amazed at how a small country can have so many hills. The 'Land of a Thousand Hills' they say.

My experience was amazing. I got to develop my leadership skills, build a network, gain a global perspective, connect with the global world, create an impressive resume, get work experience and enjoy cultural diversity. I am glad to have made a positive impact. That is what being an AIESECer is all about. By getting out of my comfort zone I learnt how to tackle challenges in unfamiliar environments and in the process developed cross-cultural interpersonal abilities and became more aware and respective of multicultural differences.

Going on exchange enhances the innovative mind-set of students arming them with skills necessary for a successful and fulfilling career. I encourage students to join IAESTE and AIESEC because it gives you a platform not only to excel in your professional life but also in your personal life.

Nicholas Njuguna Kamau
B.Sc. Mechatronics Engineering

GREAT INSIGHTS FROM GERMANY

I am thankful for the opportunity granted to me by IAESTE, through Dean Kimathi University, as an exchange program student in Germany. Many lessons were learnt in the process that began shortly after the month of March 2016. The experience spans about 3 months (precisely 87 days) and is filled with memorable moments that will hardly fade away in my lifetime.

The experience in Germany placed me in a limelight of a world class student that has since then earned me several opportunities to develop my career. In this respect, I got employed at BRCK which is a world class company dealing with telecommunication. This was because of the exceptional design skills I acquired during the exchange program. Additionally while in Germany, I gained immense interest in pursuing postgraduate studies which prior to my arrival for the program was bleak in my mind. Therefore, as a dream come true, I am currently pursuing a master degree program in Mechanical engineering at Kyungpook National University in South Korea, Daegu under the prestigious KNU Inter-National Graduate Scholarship (KINGS) Award. Much thanks to the TU Chemnitz for their powerful recommendation letter.



While in Germany, I met different people in the academic cadre who influenced my life in different ways especially the staff and students of TU Chemnitz. More especially, the most influential people I interacted with were my supervisors Prof. Dr. Ing Erhard Leidich and Prof. Dr. Ing. Marko Ebermann who ensured I gained adequate professional knowhow in the field of mechanical engineering. With their assistance I learnt several design software including PTC, CreoParametric, Solid Works, 3D printing technology among myriad others. I interacted with several graduate students at the university who positively influenced my life and awoke my desire to follow the engineering route.
While in Germany I visited several spectacular tourist attraction sites in different towns such as Love Lock Bridge and St. Bartholomew cathedral in Frankfurt, Sanssouci summer palace of Frederick the Great, King of Prussia, in Potsdam in Berlin, Leipzig Hauptbahnhof which happens to be the world's largest railway station, River Elbe and Bruhl's Terrace, Reconstructed Protestant Church in Dresden, Allianz Arena, a name common for the lovers of soccer in Munich not forgetting the Karl Max Monument and Museum RoterTurm in the city I called home for the time I lived in Germany-Chemnitz. One spectacular experience was the visit to the world motor show at BMW headquarters in Munich. My attention was also drawn to the large wind power plants that deliver power in the tune of about 29075 MW.

I would recommend students to gain interest in the program and while traveling to Germany they should remember to carry 'Unga wa Ugali' for the lovers of 'ugali'. A well prepared schedule should be precisely outlined for the student. In addition, one should ensure they have a good relationship with the employer/ supervisor, more so the professor for ample stay in Germany.
I am very grateful for the eye opening opportunity and I sincerely thank the organizers and financiers of the program. I would also encourage them to help support more students and keep the fire burning.

Image: (a) At Allianz Arena in Munich, (b) At BMW headquarters in Munich, (c) 3D printing of the components designed using PTC CREO Parametric and (d) Tensile testing of the 3D printed components using Universal Tensile Testing Machine

Melody Kogo
Alumni, Mechanical Engineering

MY EXPERIENCE IN JAPAN- GIFU UNIVERSITY



Gifu, an enchanting city of much beauty and for the first time was exposed to the temperatures of below 0o C with accompaniment of severe snow which rained and covered the whole place white since it was winter season. However, the exposure to the weather conditions was overwhelmed by the outstanding magnificent grandeur of the civil structures. The clean air well preserved with major application of renewable sources of energy to sustain the atmosphere as well as utilise the natural sources of energy to load various applications of power as well as treated atmosphere to curb airborne disease spread was a good field to obtain the workability in making Kenya achieve this vision as well. Shinkansen-their modern electric train that travels at 500KpH connecting major cities of Tokyo, Nagoya, Kyoto among others mirrors the SGR that Kenya has constructed with the vision of borrowing such technology in further improving the transport sector.

Mt.Kinka known as the residence King Nobunanga dating from 16th Century -Gifu castle, equipped with ropeway with car carriage to climb up and down the mountain.

Use of Cormorant Fishing (Ukai) at Nagara River a tradition of Gifu city, Nagaragwa Ukai Museum, Gifu Park, Aquarium with fishes from all the waters in the world among many other beautiful sites to visit.

Japanese Culture full of decorum and mannerism with all the people extending excellent spirit of charity, hospitality, trustworthy, passion, hard work, enthusiasm, generosity, free of corruption, peaceful not to limit these qualities. Very delicious highly nutritious Japanese food I ate including: motsu nabe with minimum or no discharge of waste from the body since food scientist have ensured to about 99% is absorbed in blood stream and minimum calorific quantities are in food.

Japanese language a very beautiful eloquence to study and speak.

Within my short term, one month (Yabai period), at Gifu University, (Yabai-very busy time-Japanese), my Research topic was Control systems and Design, using Arduino and MATLAB, and sub sections covered included: PID gain control application to tune the motor speed control system, Motor positioning control to ensure that the accuracy is obtained in determining arbitrary location of lateral movement corresponding to revolutions of the shaft of the motor, precision control in modern theory control using Ball and Beam Experiment which equipped me with the skills to accurately control the position of feeder carriage in my project of constructing Automated Dairy Cow feeding Unit , much of its applications I have stated in my Project Report proposal.

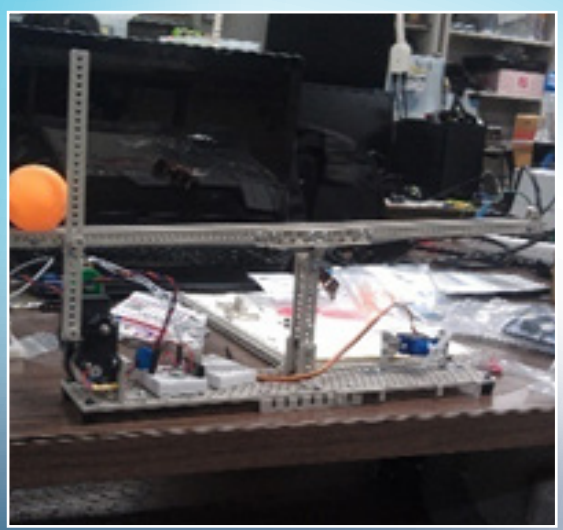
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The program has built my competence in my career since I received a certificate of completion of the program as well as my CV has been equipped and a lot of skills I did acquire have positioned me for the industry. I also managed to create









networks towards furthering my studies to masters and PhD levels. I would like to extend my sincere gratitude to Almighty God for guidance, DeKUT Vice Chancellor, Prof. P.N Kioni for his recommendation towards obtaining a Visa and the Collaboration between the two universities, Dr. Harrison Ngetha for the onset processes of my travel to Gifu University, Prof. Sasaki Minoru for having me under his research lab and equipping me with skills at Japan, Prof. Muthakia, Deputy Vice Chancellor Academic Affairs DeKUT, International office staff of DeKUT and Gifu University, Engineer Machira, chairman Mechanical Department at DeKUT, Mr.Waweru and Mr.Titus -PhD students at Gifu university Japan . Eventually, I thank my parents: Pr. Vincent Rono & Ruth Rono, my siblings, my friends whom we prayed together among them:

Naomi, Deborah and Hillary **Thank you. God bless you.**



CONGRATULATIONS TO OUR GRADUANDS

I take this great opportunity to express my congratulations to our graduands. This day marks a fruitful period of study and is of great significance to many people (parents, guardians or sponsors, friends, relatives and all people of good will) who have accorded their support towards this achievement. It's an inception to a new journey outside the university.

"Try never to be the smartest person in the room. And if you are, I suggest you invite smarter people or find a different room. In professional circles it's called networking, in organizations it's called team building and in life it's called family, friends, and community. We are all gifts to each other, and my own growth as a leader has shown me again and again that the most rewarding experiences come from relationships." As you join the world, always be great ambassadors of this great institution, Dedan Kimathi University of Technology, by proving worthy of your achievement. The world is full of everything good and evil as well and you are the master of your destiny. It's therefore upon you to make a choice every step of the way. The time spent at the university is meant to mould you so as to venture in this more dynamic and challenging word as a professional.

Challenges are many in life, use them to uncover the hidden opportunities.



MICHAEL GILISHO
DeKUTSO ICT AND ACADEMIC AFFAIRS SECRETARY 2016/2017



CONGRATULATORY MESSAGE TO GRADUANDS

Dear class of 2017,

It must be a very proud moment for you. Chasing a dream requires your effort and passion. Hard work isn't over when you graduate. It's just a break as you enter the new battlefield of life. Set your goals high and don't stop till you get there! Good luck and congratulations!

May this be the beginning of a bright future for you. You will make mistakes and be wounded many times in your life. Don't give in - it's just an experience. Find your own star and reach for it! Remember and learn from the past, live in the present and look forward to the future! May this day be just the beginning of a lifetime of fulfillment for you. The adventure begins!

Congratulations son, daughter, sister, mom, dad, friend! This phase is over but remember that a person who graduates today and stops learning is uneducated the day after. Keep learning. This is not the end. The purpose of education is to turn mirrors into windows. You are an inspiration to many, we hope your dreams take you to the most special places your heart has ever longed for. Education is the key which unlocks all your potential. It has taken determination, optimism and patience to achieve this.

Enjoy the fruit of your efforts and hard work!
Your graduation is a time to celebrate.

Nyagah Wahome Alex - 2nd year BCom Student

SCHOOL OF GRADUATE STUDIES AND RESEARCH – THE RESEARCH NUCLEUS

The DeKUT School of Graduate Studies and Research (SGSR) is mandated to establish and maintain a seamless administration and coordination of postgraduate syllabi and regulations, studentadmission and, administration and processing of theses. The School ensures that post graduate studies at DeKUT are meticulously planned and delivered in accordance to the Standards and guidelines for an academic programme (PROG/STD/00) of Commission for Universities Standards and Guidelines (2014).The School prides itself in creating systems that enable postgraduate students across various Schools/Institutes, incorporate scientific knowledge and techniques in addressing day-today's socio-economic and environmental global issues. In addressing the social pillar of Vision 2030, SGSR endeavours tocreate a human resource that is globally competitive in knowledge, skills and innovativeness.

Over the last six years since its inception, SGSR has made remarkable growth in the number of postgraduate programmes offered as well as the student enrolment. Currently, the School coordinates five (4) PhD programmes and Ten (12) Masters Currently, the following programmes are offered in the Schools/ Institutes.

School of Business Management and Economics:
PhD in Business Administration and Management
Master of Business Administration (MBA)
MSc in Economics
MSc in SecurityManagement and Forensics, and
MSc in Supply Chain Management
School of Science:
MSc in Industrial Mathematics, and
MSc in Leather Technology
School of Engineering:
PhD in Mechanical Engineering,
MSc in Industrial Engineering & Management,
MSc in Mechanical Engineering, and
MSc in Advanced Manufacturing and Automation Engineering.
School of Computer Science and IT:
PhD in Computer Science
Institute of Food Bioresources Technology (IFBT)
MSc in Food Science and Technology
Geothermal, EnergyTraining and Research Institute (GETRI)
MSc in Geothermal Energy Technology
Institute of Geomatics, GIS & Remote Sensing (IGGReS)
PhD in Geomatics Engineering, and
Master of Science in Geospatial Information Systems and Remote Sensing

The School promotes quality research through interdisciplinary seminars in addition to School/Institute specific seminars that bring together the public and respective graduate students' supervisors with the aim of disseminating new findings and encouraging scholarly debates. The SGSR ensures quality supervision of postgraduate students and tracks their progress as per the approved research schedule. Theses examination process is efficient, plagiarism is checked before thesis defence and before binding of final thesis. Students are required to disseminate research findings through publications in peer reviewed journals/conference proceedings (at least one publication at Masters and two for PhD level research) before award of the degree. The Board of Postgraduate Studies and Research (BPSR), made up of Deans of Schools, Directors of Institutes and senate representatives directs the activities of SGSR as per DeKUT Statutes (2013).

Every year, DeKUT releases a team of workforce, well equipped with appropriate knowledge and skills gained from a combination of taught coursework and innovative research. Some of the graduates from the School have made direct contribution by solving industrial problems through their research especially in the field of Engineering. This far, SGSR has released more than twentyfive (25) PhD graduates in Business, Computer Science, and Food Science and Technology; over one hundred (100) Masters graduates in Business, Industrial Engineering and GIS & Remote Sensing. The School continues to grow and has over 350post graduate students at advanced levels of research and more than 100 who are currently taking coursework.During the recent University audit by Commission of Universities Education, SGSRwas commended for "good practice" in administering post graduate studies.We invite all who qualify to visit our webpage and enrol in DeKUT post graduate programs.

www.http://dkut.ac.ke/index.php/school-of-graduate-studies-and-research

Prof. Beatrice Mugendi, PhD
Dean, SGSR.

DeKUT, THE UNIVERSITY TO BE IN!



Dedan Kimathi University of Technology is the university to be in. The University encompasses various activities that thoroughly prepare the students to face life ahead. The activities mold an all-round person prepared to surmount societal challenges. The University management ensures that students have a supportive learning environment despite the challenges that arise along the way. The University Management has gone an extra mile to ensure that it supports the students' extra-curricular activities like sports, drama and participation of students in the various clubs and societies just to mention a few. In the sports department, we have games like rugby, handball, soft ball, leg ball, basketball and the indoor games among others. The students have also actively participated in the drama festivals. That is, the DeKUT Travelling Theatre who have made us proud, congratulations to them! Through these activities, students have been able to work on their talents and areas of interest hence boosting their personal development and they also cut down on the idle time at the students' disposal.

The University management also has a keen eye on the young innovators and entrepreneurs who are coming up with great ideas. Support is given to the students to incubate and grow their ideas in a space that was purposely created for this, the DeHUB. The university also supports the well-being of the students through activities like mentorship programs, leadership trainings, public lectures and trainings in the different fields of study. Through these activities, the students are able to get a better picture of what they really want to become that is, it helps create self-awareness among the students .Self-awareness is an important tool to a person's development because it fosters the clarification of the individual's purpose and vision.Participation in the extracurricular activities is very vital to a student because they give room for interaction and exchanging of ideas through which energy is used positively. I appreciate the university management for its support towards the activities, it should also focus on the sustainability of the same so that students are motivated to participate in them. The student leaders also support the students by articulating the students' grievances to the University management as well as coming up with solutions that will improve the well-being of the students. In this case, force is not always the option but negotiation works best.

Sarah Machio Lukania - BSc. Commerce,
4th Year DeKUTSO Deputy President

WHY DeKUT SHOULD BE YOUR UNIVERSITY OF CHOICE



Dedan Kimathi University of Technology (DeKUT) is a Chartered Public University that has two campuses: the Main Campus that is located 6 KM from Nyeri town along Nyeri- Nyahururu highway and Nairobi Campus located at Pension Towers, Loita Street. The location accords students a serene and enabling learning environment. The Institution endeavors to provide 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.

Credibility of our courses: At DeKUT, we note that, technological development requires not only the masterly of techniques but the ability to establish and run successful enterprises. It is only then that the technology can contribute to wealth creation of a country. Our mix of academic programmes are spread over Engineering, ICT, Food Technology, Health Sciences, Applied Sciences, and Business Studies - fit for this purpose. Of critical importance is that all our Academic Programmes are accredited by both local and international accrediting bodies. Locally, the University's Programmes have been accredited by the Regulatory Body, Commission for University Education, and respective Professional Bodies where they apply.

Value for time: Through effective application of the trimester system of study, DeKUT ensures that her students complete their period of study within the shortest time possible while not compromising quality. Students taking four year's programmes graduate within three and half years while those taking five year's programmes graduate within four and half years. This gives time advantage to the students

Support for Innovation and Entrepreneurship: The University, in 2015, established an innovation and incubation centre (DeHUB) aimed at inspiring innovation and entrepreneurship by way of transforming innovative ideas emanating from within and outside DeKUT community into products, processes and services for commercial exploitation. Students taking different courses are mentored from this centre into creating enterprises and becoming their own brands by using what they learn in class as their base. That way, we do not just graduate job seekers but job creators and contributors to national development. So far, several projects from students have been incubated and two are already at commercial level. With the science park construction at the University underway, this is just a tip of the iceberg.

Value addition: The University has a trade mark of locally produced coffee from the University farm. Training of students backed by practical sessions in the Food Technology Workshops gave birth to this product; The Medium Roasted Coffee. The next product was Quality Yoghurt prepared from fresh milk obtained from DeKUT farm- taken through tightly controlled fermentation and packaging process. Last year, 2016, the Institute produced Coffee Flavored Yoghurt which is a perfect balance of DeKUT rich coffee flavor and tasty yoghurt. These products have attracted excitement among the DeKUT community and external partners. The Director IFBT, Dr. Eddy Owaga, says that the Institute looks forward to maintaining the best quality in all the products. The next plan is to develop other value added products from non-conventional fruits and vegetables towards satisfying the demand for natural healthy foods. The institute will later diversify to meat products particularly sausage from the pork reared at DeKUT farm. Our students from the institute of food and bioresources technology are involved in such processes enhancing what they learn in class.

World class training: DeKUT continuously establishes partnerships and collaborations towards enriching the training offered to her students. 2016 saw us venture into 3D printing: Rapid prototyping (RP) has been an ongoing research among M.Sc. Advanced Manufacturing & Automation Engineering students at Dedan Kimathi University of Technology (DeKUT). RP is an emerging collection of materials processing technologies and business practices, which together shorten product development cycles. RP technologies are frequently used towards the beginning of the product development lifecycle to create prototypes or parts used to test and verify designs before full blown production begins. RP utilizes a number of different additive manufacturing methods such as 3D Printing, Stereolithography, Selective Laser Sintering, Fused Deposition Modeling etc., to create real objects from

a CAD file. This venture will inspire technological growth in the University and the Nation by enhancing engineering skills among the students. This will help bridge the gap between the Institutions of higher learning and Industries.

Another venture is the introduction of Siemens Mechatronic Systems Certification Program (SMSCP). Manufacturing, packaging and other systems are becoming more complex and pervasive, and more knowledge is required to design, operate and maintain them than ever before. Complex mechatronic systems are the nexus of mechanical, electrical, and computerized technologies. There is a growing need for qualified people with up to date knowledge of integrated mechatronic systems. A world leader in mechatronic engineering, SIEMENS, has responded to this need by creating an industry certification program that will help students, workers, industries, teachers and institutions. Siemens Technik Akademie administrates the program and works with partner institutions worldwide to implement the program. SMSCP's technical content focuses on key industrial skill areas, such as electrical components, sensors, motor controls, PLCs, hydraulics and pneumatics. In addition to teaching the technical knowledge, SMSCP stresses trouble-shooting and system-based technical thinking via hands-on training. This technical training, paired with our engineering degree programmes will create well-grounded workers that can easily meet the challenges of high tech and advanced manufacturing industries. Dedan Kimathi University of technology has partnered with Siemens, as the first in Africa, to enhance her training in Mechatronic Engineering by offering this certification.

The Department of Criminology and Security Management has an MOU in training for both the Academic staff and our students in form of correspondences with the Korea National Police University. The goal of the correspondence training is to facilitate exchange of knowledge aimed at enhancing the department acquire the "best practices in criminalistics".

Based on the dynamism and complexity of criminalistics and criminology, application of forensic science is now demanded by courts as the best practices before determining the guilt of suspects to give accurate and objective information (facts) that reflect the events that took place in the process of commissioning of a crime.

In Kenya, the forensic laboratories are non-existence in the institutions of higher learning. Dedan Kimathi University identified this anomaly and has embarked training her students to acquire criminalistics skills, procedures and techniques. The BSc in Criminology and security management as well as the MSc. in Security and Forensic Management (introduced this year) attempts to breach the gap by acquiring criminalistics skills from Korea National Police Service and other global and local sources in pursuit of her objective of becoming a beacon of criminology and criminalistics training in Africa.

An International Experience: DeKUT has a number of vibrant student exchange programmes which are in line with the University's vision of producing globally competitive graduates and building international linkages to grow her profile as a global premier university of technology. International exchanges are life changing experiences gained by students. This makes such programmes critical to the institution's internationalization strategy. To date, a number of DeKUT students have taken part in assignments inside leading laboratories and manufacturing facilities around the world which have had a profound effect on the technical abilities of the students. In addition, living in a foreign country for two or three months at such a early age in their careers gives students invaluable insights and offers them new lenses through which to look at the world. We have signed memoranda of understanding with various universities globally for exchange of students. These include the International Association for the Exchange of Students for Technical Experience (IAESTE) and the Association for the International Exchange of Students in Economics and Commerce (AIESEC). Through these mechanisms, DeKUT has been able to send and receive students from different parts of the world which has not only enhanced the diversity of the university student population but also enabled DeKUT students gain valuable international work experience.

State of the art facilities: At DeKUT, we do not compromise on quality. The University has invested in facilities geared towards providing students education that does not just give them good grades but add value. We have facilities such as:-

ADVANCED MANUFACTURING AND TRAINING CENTER:
These are our engineering labs where engineering students interact with the most modern machines with the help of their lecturers and the lab technicians for their practical's. Several students have featured with great innovations developed using the hardware technology practiced here.

Library: The University has a modern library that provides competitive, adequate and relevant information services in support of learning, teaching and research. The University Library gives access to over 200,000 e-books from various databases and a collection of approximately 30,000 volumes of physical books. Furthermore, the University library also has access to approximately 20,000 e-journals in various subject areas.

University Conservancy: With courses in the institute of tourism and hospitality management, the University established a conservancy that is a tourist attraction as well as avenue for the students to practice service in the Tourism and Hospitality Industry.

Going the extra mile as a family: DeKUT endeavors to provide quality education to all irrespective of their social and financial background. It is to this effect that in 2014, the University established an Endowment Fund (DeKUTEF) with the goal of supporting talented and financially disadvantaged students to access and successfully complete the highly competitive programmes offered by the University through provision of scholarships and bursaries. This will ultimately aid the University to operate truly to her historical foundation and heritage of being an Institution of the society and working for the improvement of the people. We hope not only to attract the great minds to this Premier Technological University but to also be able to retain them without the hindrance of financial constraints .

Esther Wanjiru Kaburu, **Public Relations Office**

DIRECTORATE OF STUDENTS WELFARE

The students' welfare services at DeKUT are provided under the Directorate of Students' Welfare (DSW). The primary responsibility of the Directorate is to cater for students' welfare from the time they join the University until they graduate. It co-ordinates all the students activities and addresses issues that affect students' well-being, be they personal, academic, social or economic. The Directorate plays a very central role in the students' learning and development, which consequently advances the achievement of DeKUT's mission. The Directorate acts as the link between the University Management and the students.

The DSW provides numerous services aimed at promoting the welfare of the ever-growing students' population at the University's two campuses namely the Main Campus at Nyeri and the Nairobi CBD Campus. The Directorate facilitates the provision of the following services to DeKUT students: Guidance and counseling, spiritual guidance, games and sports, students government – DeKUTSO, clubs and societies, accommodation, financial aid, entertainment and recreation and Wardenship services. All these services are provided through four departments namely: the Deans of Students Office, the Counseling Department, the Sports and Games Department, and the Chaplaincy Department. The Directorate also works in liaison with other departments within the University among them the medical, catering, transport, and student finance office in addressing students' matters.



Accommodation

The current DeKUT students' population is approximately 7000. DeKUT does not have adequate accommodation spaces for all the students and only hosts about 5% of the students in her hostels. Room allocation for the University Hostels is exclusively reserved for the first year KUCCPS students and those with special needs in order to give them a soft landing However, the Directorate is tasked with identifying suitable hostels for the remaining 95%. The collaboration between the University and the local community through the provision of hostels to DeKUT students has enabled DeKUT utilize her funds to develop academic infrastructure thereby creating an academically stimulating environment.

Wardenship

In order to promote the students' welfare within their areas of residence, the University Management established residential sectors which are under headship of a warden. The principal role of the wardens is to mentor students in their respective sectors to enable the resident students develop socially, as individuals and as a group. The warden system exposes all the students to campus life and experience, especially those living off campus, thereby fostering a sense of belonging among the students. This system promotes cohesion and integration among students. It is also anticipated that it will enhance positive behavior and discipline among the students which would consequently improve relationship between students and the community.

Financial Aid Programmes

The University, through the DSW, provides opportunities to the students to earn some income and work experience while studying. This is accomplished through a work-study programme which is administered by the Directorate. The programme is designed in such a way to promote part-time employment for financially challenged students.

The DSW also plays a significant role in identifying and recommending financially challenged students for the award of internal and external bursaries. Internal bursaries for needy students enrolled into DeKUT programmes are awarded based on the need of applicants. A case of the Directorate's intervention in external bursaries was in November 2016, where the Directorate took part in identifying a suitable candidate for the Canadian Federation of University Women-Vernon Club Scholarship (CFUW-V), a financial aid programme that supports one needy final-year female student.

In some instances, the DSW goes out of its way to solicit for free accommodation from the external hostel providers for financially challenged students. For example, during the September-December 2016 semester, the Directorate secured free accommodation for ten (10) needy students.

Clubs and Societies

The Dean of Students is charged with the registration of Clubs and Societies. The Dean guides and encourages students to



form and develop professional clubs and societies. The Dean also provides administrative support to the students. Currently, there are about twenty-seven (27) registered clubs and societies that are active. Others are in the process of being registered. They are divided into academic, social, association and faith-based clubs.

One of the most active clubs is the DeKUT Travelling Theatre. This group has participated in a number of activities within Nyeri and beyond. In October last year, the students entertained guests at Outspan Hotel during the 50th Anniversary celebrations of the Central Bank of Kenya – Nyeri branch. The group has also represented the University during the music festivals and drama festivals at regional and national levels. Its performance has been outstanding since its inception in 2015. During this year's regional music festivals which were held at Mount Kenya University - Thika, the Travelling Theatre team was the second runners-up in the cultural dance category.



Counseling Department

Under the leadership of the HoD Counseling, counseling services in DeKUT are geared towards addressing students' personal or emotional problems that get in their way and hinder them from realizing their full academic and personal potential. Students accessing counseling services are attended to either as individual clients or in groups in a single session or several sessions depending on the issue being addressed. Peer counseling services are also provided through the Counseling Department. The role of Peer counselors is to provide support to other students to enable them gain competence in management of mental health difficulties or studies.

Chaplaincy Department

Chaplaincy activities are encouraged among students. Currently, there are four religious groups recognized by the DSW namely: Catholic Action (CA), Christian Union (CU), Seventh Day Adventists (SDA) and the Muslim groups. The directorate encourages all students to be affiliated to any of these groups for their spiritual nourishment.

Sports and Games Department

Co-curriculum activities have continued to play a crucial part in talent development amongst the students and staff. There are 16 men and 12 women registered sports and games teams. DeKUT soccer sports club participated in Nyeri County League (2015) and was later promoted to the Regional League (2016). Other teams have also been participating in the Kenya University Sports Association (KUSA) championships, the annual East African Games competitions among other championships.

This year, the University has been selected to host the National KUSA championships which shall be held in December 2017. This event will provide a perfect opportunity for our students to develop and utilize their talents in various sporting disciplines. In addition, the event will bring about harmony between the University and the neighboring community through sharing of facilities, healthy competition and providing an opportunity for economic growth.

DeKUT SET TO HOST 2017 KUSA NATIONAL GAMES



DeKUT soccer team (contractors) in a celebration mood after winning Nyeri county league. They are also 2017 KUSA-Central football champions

Dedan Kimathi University of Technology offers many sports and games opportunities to her students. The sports and games are organized in form of clubs and teams. The following have been very active and participated locally, nationally and internationally:

Soccer (M/W), Volleyball (M/W), Basketball (M/W) ,Hockey (M/W), Netball (M/W), Softball(M/W), Handball(M/W), Cross country(M/W), Track and field, Scrabble, Chess, Karate, Shorin RYU, Table Tennis, Tennis, Badminton, Swimming and Rugby.

The University games in Kenya are governed by The Kenya Universities Sports Association (KUSA),which is divided into 5 sporting conferences namely; Nairobi, central, Coast, Western and rift valley. Our university belongs to the Central Sports conference, the central conference is comprised of; DeKUT, Kirinyaga, Embu, Meru, Murang'a, KeMU, KU-Kitui, KU-Nyeri and Garissa University College.

DeKUT has participated in several major tournaments which include:

- 2010 December ,we participated in 7th Edition of EAUG at Kenyatta university
- 2011 December, we participated in KUSA National games at Ruaraka grounds Nairobi
- 2013 February, we participated in the 8th edition of the East Africa University games in Dar-es-salam (Tanzania) where 52 players in 5 disciplines represented the university and performed very well; Volleyball (M) was in position 3 out of 42 universities and was the best Kenyan University out of 17 Universities.
- 2014 December, we participated in KUSA National games in Eldoret and our swimmers and netball team for men did well and got bronze medals.

Major Tournaments hosted

- 2014 March we hosted KUSA National playoffs
- 2015 September we hosted KUSA-Central women championship
- 2016 April hosted KUSA-Central playoffs
- 2017 March hosted KUSA-Central playoffs
- 2017 December 15th -21st we are hosting KUSA National Games

Benefits of hosting KUSA National games 2017:

Hosting of KUSA sports and games is usually awarded to a university after a competitive bidding by a number of member universities. On 23rd February, 2016 during sports and games heads of departments and KUSA delegates' meeting held at Pwani University, 3 universities contested the opportunity to host the 6th edition KUSA games in 2017. DeKUT competitively won the bid against Kenyatta University and USIU. DeKUT was therefore formally requested, through the Vice Chancellor, to host the said event in December, 2017.

Our university has invested heavily in sports; both recreational and competitive and has an allocation of approximately 5.4million shillings annually for sporting activities, equipment

and inter-university games. The Department has 3 qualified personnel 2 in sporting field and 1 in outdoor activities.
Is the university justified in investing heavily in sports? Sports being a co-curricular activity compliments curricular activities and have huge benefit to our students. Benefits of recreational and Competitive Sports

What attracts students to a university—academics? Recreational activities and facilities? sports? If you selected all the three answers, you are right. Most students choose a college or university for its academic merits, but another key factor in their decision is the sports and recreational programs and the facilities. Recreational sports are an important component to students' quality of life in campus. Engaging in sports; both recreational and competitive teaches life lessons like discipline, responsibility, self-confidence,



Kariuki George , DeKUT world shortest rugby player giving a smoother Tackle to Thika united right wing player

accountability and teamwork. In addition to this, exercising is a great way to get out of the stressful university life that is mostly about assignments, presentations and group projects. In fact, sports helps students relax and reduce their anxiety not to mention keeping staying healthy.

ACADEMIC BENEFITS

Research has shown that exercise increases blood flow to the brain and helps the body

build more connections between nerves, leading to increased concentration, enhanced memory, stimulated creativity, and better-developed problem solving skills. In short, playing sports helps your brain grow and makes it work better hence sports has been proven to increase the rate of positive academic achievement. Make one improve in unit grades; Continues Assessment Test (CAT) and overall consistency in the university have been linked to competitive sports.

SOCIAL BENEFITS

Competitive and recreational sports also allow participants to maximize the understanding of their peers and colleagues. The more dialogue a student has with their classmates, the better they understand the culture they reside in and how they can make an impact on it. Competitive sports foster healthy communication promoting the idea of campus growth and place identity. Competitive sports also prove to reduce social alienation amongst participants. Sometimes while in the business of studying at the University, things get tough and time goes quickly leading to people alienating themselves to find peace. Sports allowed students to release the tensions of the day with their peers instead of coping alone.

PHYSICAL BENEFITS

Over and above all, competitive sports' and recreational sports benefit to the physique is the most evident. Whether strength, endurance or coordination, competitive sports allow students to continue living like an athlete.

The mentality of always being prepared for competition encourages physical attributes to flourish and develop through sports.

While having fun and developing relationships, sports such as soccer, swimming and basketball promote cardiovascular health or fitness. Cardiovascular health is vital in many day-to-day aspects including energy reservation and energy use.



'The Titanides', ladies hockey team, in a jovial mood before the kick off of KUSA –Central women championship.

The better your cardiovascular fitness is, the easier the long walk from one class to another becomes and the less you visit medical center of the university.

Benson Gathoni - HoD-Sports

OUTDOOR CHALLENGE ACTIVITIES



These are activities & events that are coordinated by the Outdoor instructor's office which functions under the auspices of the Dean of Students. Below are some of the activities that we undertake:-

Planning and leading of excursions and major expeditions

We send our expeditions to local (Non-remote) destinations within a maximum radius of 45km on 1 day excursions where participants hike 15-24km, round-trip.
The trips are very popular with students and staff members alike. In one semester for instance, 7-9 excursions are organized. They largely promote cohesion and integration which are indisputably some of the key components of environmental peace. The participants also benefit from exercise as well as adventure. We also plan and execute extended days excursions while remote-camping in the wilderness, lasting 4-6 days and covering over 75Km, round trip to the desolate alpine zones of Mt. Kenya.









This far, more than 3,200 students, Alumni & friends have participated in outdoor activities, some as repeat participants at either excursion or expedition levels or both, thus making it a DeKUT lifestyle.

Evening fitness exercises

This fitness program has attracted participation from both students and staff members. It is not necessarily designed for mountain climbers and the doors are open to all! The Outdoor instructor and 3 student-facilitators spearhead the exercises. We meet 3 days a week at Munyeni grounds 5-6.30pm for Jogging, aerobics, team-play and bonding initiatives.

A-Frame. Students have to recall and utilize several dynamics in physics before they can navigate gravity and set the A-Frame in locomotion.



Outdoor pursuits

The most recent is DeKUT Challenge Course which is slowly growing to become a mega-experiential-based adventure challenge centre. It is located between the Nyandarua men's-hostel and the main workshop. The challenge-course is designed to host 3 challenge levels, namely:-

Low ropes & initiatives

This includes low-height elements that are guaranteed to rock and shake every sinew and nerve in your body. There are both individual and team challenges. The teams need to plan and strategize before undertaking any of the team challenges. Some of the elements in this category employ the use of portable props that could be set up at the time and place of need and later to be retrieved. Under this category, a few elements have come up, among them, Mohawk Walk, Wild log, Atom transfer, gold transfer, spider's web and A-frame.

Mid-range ropes

These elements are constructed at least 5-10ft above the ground. The climbers need the team around to spot them just in case they trip or fall off. Spotting exercises before climbing on this category of elements is useful to instill trust for the team. Some of the elements under this category include: - Trust fall, Chicken-wire crossing & Slack-line.





High ropes

These activities are mostly "Challenge by Choice". The individual is suspended between 15 and 35ft in the air using special cables, pulleys, carabineers, slings, belay-devices and kern-mantle ropes and then required to perform certain maneuvers. Each section houses a different challenge element. While the facilitator checks and instructs the climber on how to manage the equipment, the team supports the climber emotionally to find safe and efficient ways of accomplishing the set tasks. One of the most important aspects of the high ropes is the presence of sound belay devices, impeccable belay systems and well experienced belayers or facilitators that hold and manage the other end of the rope that harnesses the climber. Some of the finished elements under this category include: the commando crawl, chuck a hunk, Hour glass. The 30ft climbing wall is finally taking shape and shall be fully operational by June, 2017.



Self defense classes

We instruct and coach martial-arts courses in self defense. A bunch of students have enthusiastically advanced in the ancient orient arts of Kempo & Kung fu that have eventually turned the Munyeni playing grounds into a tiny eastern hamlet every Tuesday and Thursday, between 5 and 6.30pm.

The instructional languages are Japanese and English. Recruitment for new members is done at the beginning of every new semester.

So, next time you need to re-condition or slough off a pound or two while still laughing with the teeming' DeKUT-ians', be sure to visit us at the Student Welfare Directorate.



Mr. Mwai Kennedy - Outdoor Instructor

PROFOUND LESSONS FROM MT. KENYA



At the end of every climbing expedition, I invite the climbers to send in articles about the highs and lows of climbing and being at Mt. Kenya. A total of 28 articles from all the five Mt. Kenya expeditions combined have so far been volunteered. I have also taken time to interview and orally reflect with individual students and staff members about their unique experiences.

At this juncture, the total number of students and staff members who have climbed Mt. Kenya under the climb to educate initiative stands at 475 inclusive of some 22 repeat visits. (Now you are thinking, "Why would any thinking person want to visit Mt. Kenya more than once?") Good old question, but too bad there is no good answer!

I accompanied each of the 5 major climbing expeditions as well as the 12 simulated excursions as their expedition leader. While I have used the not-so-positive feedback for the purposes of effecting the necessary changes for future expeditions, below is an edited digest of what the climbers were appreciative about:-

- **Organization**

Mount Kenya has a harsh, sometimes hostile environment, but the other world is even harsher and more complex in ways that are intangible. Winds, cold and rain are tangible.Frustrations, anxiety, depression, haste, inattention & loss of focus are intangibleIf we are organized, we can weather the storms.

- **Thoroughness**

In the wilderness of Mt. Kenya, we could easily see the consequences of leaving things half done, unattended or undone!The front world, has numerous disruptions, distractions & stimuli that make it easy for us to neglect some of our responsibilities. Then we find ourselves buried under a pile of on-going projects & without a direction. Sometimes, it's more valuable when we are slow but thorough.

- **Preparedness**

At Mt. Kenya, we need to be prepared for every eventuality of the weather. In the front country, we have to be prepared for each and every eventuality. There are no rules, the worst happens and only those who are prepared shall not be caught off-balance.

- **Taking care of ourselves**

The best you can do at Mt. Kenya is to be able to take good care of yourself. Eat & hydrate well, insulate your body, rest & sleep enough! Stay tuned to new developments and adjust. In the civilized world, we need to take care of ourselves even more aggressively because the environmental hazards and exposures are even greater- noise, pollution, crowding, schedules, tensions, peer pressure (And even beer pressure!)

- **Staying in touch with the basics**

At Mt. Kenya, we needed to cook our own food and select the place where we'd sleep every night. We took care of our own minor injuries and those of our friends; we disposed off the waste that we generated in an environmentally friendly way. We also took time to learn how tents and stoves worked. Those were the basic stocks. The front world is far more complex and needs us to uphold more basic ideas than at Mt. Kenya.



Keep taking (appropriate) risks with people

Our own aliveness can be measured by the aliveness of our relationships with others. At Mt. Kenya, we get to choose our tent-mates, cook groups or hiking groups from a limited circle of hikers. We don't know some of them, yet we end up instinctively sharing tents, cooking and even sharing our personal information with them! (Bonding) In the front country, there are many people to choose from and the spectrum of differences is broader. But the dangers are still present. Anytime we board a matatu with a stranger, we are entrusting our lives to that person! If any reason or sign crops up not to get close, we need to examine very carefully & make fast & wise decisions.

We can let go and do without (seemingly) important things!

What rules the front country? Hot showers, forks, roofs, the fridge, T.V.s, heaters, commuter -buses, beds, toilet tissues. Aren't we 'plugged-in" to technology just too much! At Mt. Kenya, it's zero showers, our "forked" fingers, ice-cooling, the landscape, our leg-muscles, sleeping-bags and old man's beard. Did that ruin our joy? Ha-pana! Anything can be done without! Period!

Let's persevere at difficult things

It may not be as tall and as concrete as Mt. Kenya or immediately rewarding as macaroni & Tuna! But the world is given to those who persevere. Often, we don't receive any support or recognition for our perseverance because….just like at Mt. Kenya sometimes, everybody is busy getting confused.

Keep on learning how to use new tools and techniques

Comps, pop-corn makers, autos, chop-sticks, tennis, badminton, kung fu, snorkeling & even nuclear science! Just because you haven't seen it before doesn't mean you can't soon be a pro! The only truly old people are those who have stopped learning.

Take good care of things

Imagine if we lost our tent-poles or wet your sleeping bags (Ha! I mean, eh...expose them to the rain) or if we accidentally had paraffin spill over our rice bags! At Mt. Kenya, that would cripple and most likely kaput our expedition! In the towns, why the fuss! We'd just run to the super-market and have everything replaced right away. We have limited choices at Mt. Kenya, so we learn to select quality products and use" bomb-proof "or impeccable systems. We throw away as little as possible, mend what is broken and have no choices but to take care of what has been entrusted to us, Now, that's some stewardship that shall inevitably be transferred to our daily lives in the front country!

Living simply

Sometimes, we didn't just "do something", we sat there! (Intended malapropism).

There is no substitute for sanity! The therapeutic effect of skipping rocks on lake Harris (glacial lake), scaling a peak, walking along a purling brook or picturing a nesting scarlet-tufted malachite (Oh, that's an alpine bird by the way) is immeasurable! Just relax and take lessons from such nature genius. Sorry for the heuristics!

So, how were our expeditions like?

Some of the things that we learnt shall perpetually serve us in any part of the globe.

When we go back to our university or homes, we may never have to pitch tents, use sleeping bags, back-packs, shovels, a map & compass or wear our muddy boots! We may never in reality have to eat macaroni & do the (in) famous rock smears and cat-holes!

But what we could carry back with us are the lessons and skills that we learnt.

We shall say that;

- We were organized, thorough and prepared.
- We took care of ourselves in most basic ways.
- We were cohesive and entrusted other people with our lives.
- We learnt to do without a lot of stuff and persevered at difficult things.
- We learnt to use new tools and took care of them.
- We lived simply! That's nostalgic enough for us to want to visit Mt. Kenya more than once

Mr. Kennedy Mwai
Outdoor Instructor

MAISHA PROJECT - THE UNIVERSITY'S TOUCH IN THE COMMUNITY



DeKUT nursing staff and Canadian Consultant doing a demonstration during EmONC training

MAISHA is a Maternal, Newborn and Child Health (MNCH) partnership between Dedan Kimathi University of Technology (DeKUT) in Kenya and College of the Rockies (COTR) in Canada with funding from the Canadian Government. MAISHA's objective is to reduce maternal, new-born, and infant mortality in Nyeri and Migori counties in Kenya through improved access to quality MNCH services in rural communities.
The project's strategic approaches are;

- Community Health Unit Strengthening through establishment of Community Health Units(CHUs).
- Training of Community Health Extension Workers (CHEWs) to support CHUs.
- Facility Obstetric Services Scale-Up through training of health workers in Emergency Obstetric and Newborn Care (EmONC) and supply of equipment.
- Improving access to MNCH services by linking CHUs to health facilities
- Training DeKUT Nursing faculty to give technical support in the project implementation.

The project uses unique approaches to achieve sustainable gains. For instance, MAISHA has been working with 44 Reformed Traditional Birth Attendants (TBAs) in Migori since 2015 to increase antenatal care by health workers and hospital delivery. The TBAs were initially trained for 3 days to re-orient their practices from home deliveries to support and referring pregnant women to health facilities for safe care. In January this year, the reformed TBAs were engaged in a 2 day nutrition training to enable them educate women in their communities on how to feed their families with healthy locally available food.

The reformed TBAs are now partners with the Ministry of Health in improving maternal and child health indicators. They are contributing to reduction of maternal and newborn deaths from preventable causes related to pregnancy like; excessive bleeding of the mother after birth, complicated deliveries among others. Management of complication related to pregnancy and birth are best done in a health facility with skilled health workers who are able to treat and refer to a high facility if necessary.
Other achievements by MAISHA are;

- Nursing faculty from DeKUT trained as instructors for an internationally-recognized EmONC programme.
- Over 54 nurses and Ministry of Health (MOH) supervisors were trained in EmONC, increasing coverage from 4% to 90%.
- Development of a 2 day Focused Emergency Obstetric and Newborn Care (FEmONC) training for health centres and dispensaries.
- Creation of EmONC protocols for management of complications in maternity.
- Equipping of DeKUT and Kenya Medical Training College Migori with EmONC equipment for training of health workers and students.
- Initiation of training of over 210 volunteer community health workers.
- Training of DeKUT's administrative and project support team in Results Based Management (RBM) and Research.
- Contribution of DeKUT staff to the MOH's development of a national CHEW training program.
- Training of Project CHEWs in leadership and community mobilization.
- Procurement and supply of critical diagnostic and emergency obstetric equipment to rural health facilities e.g. dopplers, delivery packs.
- Training of 44 Traditional Birth Attendants to embrace a new role as community referral agents to reduce home deliveries in Migori.
- Training of all CHVs in Income Generating Activities thus improving CHVs retention instead of using stipends which are not sustainable.

Winnie Koima
Maisha Project Coordinator

KNOWLEDGE ON HIV/AIDS

How is HIV spread?

HIV can spread only in certain body fluids from a person infected with HIV:

- Blood
- Semen
- Pre-seminal fluids
- Rectal fluids
- Vaginal fluids
- Breast milk

The spread of HIV (called HIV transmission) is only possible if these fluids come in contact with a mucous membrane or damaged tissue or are directly injected into the bloodstream (from a needle or syringe). Mucous membranes are found inside the rectum, the vagina, the opening of the penis, and the mouth.



HIV is spread mainly by having sex or sharing injection drug equipment ("works"), such as needles, with someone who is HIV positive. HIV can also spread from an HIV-infected woman to her child during pregnancy, childbirth or breastfeeding. This spread of HIV is called mother-to-child transmission of HIV. HIV can also be acquired by receiving a blood transfusion or organ/tissue transplant from an HIV-infected donor.

You can't get HIV from casual contact with a person infected with HIV, for example from a handshake, a hug, or a closed-mouth kiss. And you can't get HIV from contact with objects such as toilet seats, doorknobs, or dishes used by a person infected with HIV.

How can I reduce my risk of getting HIV?

Anyone can get HIV, but you can take steps to protect yourself from HIV infection.

- Get tested and know your partner's HIV status. Talk to your partner about HIV testing and get tested before you have sex.
- Have less risky sex. Oral sex is much less risky than anal or vaginal sex. Anal sex is the most risky type of sex for HIV transmission.
- Use condoms. Use a condom correctly every time you have vaginal, anal, or oral sex. Get facts on SAFE

CONDOM USE

- Limit your number of sexual partners. The more partners you have, the more likely you are to have a partner with HIV whose HIV is not well controlled or to have a partner with a sexually transmitted disease (STD). Both of these factors can increase the risk of HIV transmission.

- Get tested and treated for STDs. Insist that your partners get tested and treated too. Having an STD can increase your risk of becoming infected with HIV or spreading it to others.

- Talk to your health care provider about pre-exposure prophylaxis (PEP). PEP is an HIV prevention option for people who don't have HIV but who are at high risk of becoming infected with HIV. PEP involves taking a specific HIV medicine every day. This is commonly used after rapes, exposure to infected bodily fluids etc

- Don't inject drugs. But if you do, use only sterile drug injection equipment and water and never share your equipment with others.

Are HIV medicines used in other situations to prevent HIV infection?

Post-exposure prophylaxis (PEP)

PEP is the use of HIV medicines to reduce the risk of HIV infection soon after a possible exposure to HIV. PEP may be used, for example, after a person has had sex without a condom with a person who is infected with HIV or after a health care worker is accidentally exposed to HIV in the workplace. To be effective, PEP must be started within 3 days after the possible exposure to HIV. PEP involves taking HIV medicines each day for 28 days

Prevention of mother-to-child transmission of HIV

Pregnant HIV-infected women take HIV medicines during pregnancy and childbirth to reduce the risk of passing HIV to their babies. Their newborn babies also receive HIV medicine for 6 weeks after birth. The HIV medicine reduces the risk of infection from any HIV that may have entered a baby's body during childbirth.

Dr. Macharia
DeKUT Medical Center

DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY (DeKUT)

Better Life through Technology

THE 3RD DeKUT INTERNATIONAL CONFERENCE ON SCIENCE, TECHNOLOGY, INNOVATION AND ENTREPRENEURSHIP

DATES: 1st – 3rd November 2017 VENUE: DeKUT Main Campus, Nyeri, Kenya

ANNOUNCEMENT AND CALL FOR PAPERS

CONFERENCE THEME:

Harnessing Science, Technology, Innovation and Entrepreneurship for Sustainable Development

Objectives of the Conference

(i) To provide a forum for research peers from local and international institutions to discuss, share and publish research findings.
(ii) To provide an opportunity for the industry to interact with researchers and innovators through exhibitions.
(iii) To provide a forum through which researchers will disseminate their research findings and showcase their innovations to the society.
(iv) To provide a forum that will allow research students from different countries to interact with each other

Conference Sub Themes

1. Engineering Technologies and Innovations for Industrialization.
2. Business Management and Entrepreneurship for Sustainable Development.
3. Basic and Applied Sciences for Advancement of Research and Innovations.
4. Innovative Agricultural Sciences and Technologies for Sustainable Food Production and Food Security.
5. Water, Energy, GIS and Remote Sensing, Environment, and Climate Change.
6. Health Sciences and Community Development.
7. Information and Communication Technology for Development.
8. Tourism, Wildlife and Hospitality Management.
9. Policy, Governance, Cultural and Socio-Economic Aspects for Competitive Advantage.
10. Security Trends and Innovations.
11. Trends in Technical Education and Training.
12. African Development, Harnessing Traditional Knowledge
13. Data Science for Sustainable Development

Guidelines to Authors

Application for participation in the conference will be made by completing the provided ***registration form***. Abstracts must be prepared using the ***abstract template*** provided. Electronic copies of the registration form and abstracts should be submitted to the conference secretariat via e-mail: sti.conference@dkut.ac.ke.

The deadline for submission of abstracts is **9th June, 2017**. The abstract should outline the aims, methodology, results, discussion and conclusions. It should include the title, the name(s) of the author(s), affiliation, mailing address, e-mail address and telephone contacts. Authors should also state the sub-theme and indicate their

preference for oral or poster presentation. The deadline for acceptance of full papers will be **18th August, 2017**. Authors must follow the ***Guidelines for the Full Paper*** submission provided.

Selected papers will be published in the Journal of Applied Sciences, Engineering and Technology for Development.

Exhibitions

There will be facilities and space at the conference venue for organizations and individuals to exhibit products and disseminate information relevant to the conference theme.

Accommodation

Hotel accommodation is available in Nyeri Town at a price range of KES 3,000 -12,000 (US$ 30-120) per person half board. Booking can be facilitated through the conference secretariat on prior request.

Important Dates

Deadline for Abstract Submission	9th June, 2017
Notification of Abstract Acceptance	14th July, 2017
Deadline for Submission of Full Papers with Revised Abstracts	18th August, 2017
Early Bird Registration	By 31st August, 2017
Normal Registration	By 13th October, 2017
Late Registration	After 13th October, 2017
Deadline for Exhibition Registration	13th October. 2017
Conference Dates	1st – 3rd November. 2017

Conference Registration Fees

PARTICIPANTS	EARLY REGISTRATION (By 31st Aug, 2017)	NORMAL REGISTRATION (By 13th Oct, 2017)	LATE REGISTRATION (After 13th Oct, 2017
East Africa Community	KES 8,500 US$ 80	KES 10,500 US$ 100	KES 11,500 US$ 110
Other regions	KES 10,500 US$ 100	KES 12,500 US$ 120	KES 13,500 US$ 130
Students	KES 2,600 US$ 25	KES 3,100 US$ 30	KES 3,700 US$ 35
Exhibitors	KES 20,500 US$ 200	KES 20,500 US$ 200	KES 20,500 US$ 200

Payments should be made through cheque, electronic funds transfer or direct cash deposit to:

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Account number: 1121318274
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Please retain original receipt or transfer notification for our records during the conference. Conference fees will cover refreshments, lunch and conference materials only.

ENQUIRIES

For further information and clarifications kindly contact:
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