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It is with great pleasure that I welcome you to this souvenir graduation magazine issue of Dedan Kimathi University of Technology. The Magazine offers you, through the eyes and experiences of the many staff who have written the various articles, a sneak preview of our University set-up and the many academic and related services provided.

Undoubtedly, our focus on technology, in its broad interpretation, comes through these articles. Thus, besides the applied science, there is also a good measure on our business related programmes. Ours is a deliberate effort to contribute to impart technological know-how and thus to contribute to national development by providing the requisite human resource for Kenya's industrial development. In this regard and as exemplified in the content of this colourful and informative magazine, Dedan Kimathi University of Technology has developed academic programmes that are in line with the country’s economic blue print, Kenya Vision 2030. We commit ourselves to being relevant and responsive to the country’s immediate and future needs as aptly engraved in our vision of becoming a premier university of technology excelling in quality education, research and community service.

Our motto “Better life through Technology” is not mere rhetoric; history bears us out. Nations that have embraced technology have had fast economic development, and hence an improvement in the wellbeing of the people.

Lastly, I invite you to join me in congratulating graduands of our first graduation ceremony since we were granted a University Charter on 14th December 2012. This issue of our magazine is dedicated to the graduands and as I wish them the best in their future endeavours, I urge them to maintain strong links with their Alma Mater and be good ambassadors of this university.

Enjoy the reading!
patriotic, selfless and transformative leaders whose primary aim will be to promote peace, national unity and integration.

He assured the immense throng that was present at the Charter ceremony that Kenya is fully committed to utilizing science, technology and innovation for the benefit of her citizens saying the many world-leading innovations coming out of the country in the areas of mobile banking, financial transactions and other ICT applications are testimony of the country’s commitment to encourage innovation in science and technology.

Kibaki commended Dedan Kimathi University of Technology for striving to orient its academic programmes towards science and technology education and training.

“Since you have now become a fully-fledged university, we expect that you will continue the drive towards making science and technology education your core specialization,” the former president said.

The former Head of State encouraged the university administration to continuously benchmark with the best universities in its areas of specialization in the region and globally, and to remain a truly world-class university that ensures the relevance and global competitiveness of its graduates.

He also paid glowing tribute to the founding members of the institution for their commitment and hard work that contributed to the transformation of the Dedan Kimathi Institute of Technology to a fully-fledged University.

Speaking during the occasion, former Vice-President Kalonzo Musyoka noted that the awarding of the Charter is an honour to freedom fighter and hero Dedan Kimathi, and others like him whose dream was to realize a free and development-oriented country.

Other speakers included former Higher Education, Science and Technology Minister Prof. Margaret Kamar, former Special Programmes Minister Esther Murugi and Commission for University Education Chairman Ezra Marii.

During the occasion, the former President received a memento in recognition of his service to the university, including being the Chairman of the former Board of Trustees of the Kimathi Institute of Technology.

The former Head of State also presented the instruments of authority, which included a mace, logo and seal, to the University administration.

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The new Universities Act 2012, which was passed by our Parliament and appropriately received my assent, marks the beginning of a new chapter in the history of higher and tertiary education in our country.

Dedan Kimathi University of and Technology (DeKUT) is a successor to the former Kimathi University College of Technology (KUCT) that existed between 23rd August, 2007 to 14th December, 2012, which was itself a successor of the Kimathi Institute of Technology (KIT).

The KUCT was a constituent college of JKUAT from 23rd August, 2007 to 14th December, 2012. The institution started offering degree programmes in 2006 as an accredited center for JKUAT. It ran JKUAT degrees under the supervision of JKUAT Senate. There were about 20 degree students in the initial group of 2006.

Kimathi Institute of Technology (KIT) was founded in the 1970’s, and began as a Nyeri District community initiative to serve as a technical base from which the community would advance technologically to keep pace with the rest of the world and serve the community’s needs. It espoused the spirit of self-reliance and determination engrained in the community and demonstrated in the national struggle for Kenya’s independence, which was epitomized by the freedom fighter Dedan Kimathi after whom it was named.

DeKUT was awarded a Charter on 14th December, 2013 by the former President, Mwai Kibaki. This followed the commencement of the Universities Act, 2012.

DeKUT is located some six kilometers from Nyeri Town along the Nyeri-Nyahururu road. It is sited on expansive grounds covering 864 acres.

Student Population

The student population at DeKUT has grown tremendously since 2008, from the initial 514 students when the institution admitted the first and second cohort of Joint Admission Board (JAB) students in 2008 to the current 4,660 students.

Graduation

The first graduation was held in August, 2011 to award
The launch of the KUCT Alumni Association took place on 18th February, 2012 with about 62 members registering. An Interim Committee of four nominated persons was put in place and is currently looking into recruitment strategies of increasing the number of alumni members. The university will establish an Alumni Association Secretariat to support the Association’s activities.

Expansion of the University

In order for the university to increase access to education, and in recognition of the needs and constraints of employed people, DeKUT opened the Nyeri Town Campus and the Nairobi CBD Center.

Nyeri Town Campus

Nyeri Town Campus was established in April 2010 to offer evening and weekend programmes. The campus has about 600 students in different programmes.

Nairobi CBD Center

Nairobi CBD Center opened its doors to the public in January, 2012 with a total population of 41 students during the first intake. The major milestone was the first intake of PhD, with a group of 24 students. The total population for Nairobi stands at about 97 students distributed among different programmes.

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Alumni Association

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Since time immemorial, innovations have transformed life. In the 1440’s, the Germans invented a printing press and changed the ways of documentation with later improvements, and this innovation spread to most parts of Europe. The compass was improved in China in the same century and has been used worldwide since then.

In Kenya, innovations have been recorded in areas of tools fabrication, energy devices, textiles, and information and communication technology, among others.

With such vast experience in institutional development and organization as well as his immense academic prowess, Professor Keya is well-suited to hold the reigns of this newly elevated Dedan Kimathi University of Technology, and the sky is the limit regarding the heights in academia and scholarship to which he will raise it.

Innovation has been defined as the development of new values and processes through which solutions are found that meet new requirements and customer and market needs in value-adding new ways. Innovations are expected to lead to development of better and more effective products, processes, services, technologies, or ideas that are readily available to markets, government, and society. These may also be commercialized to accrue benefits to the innovator.

Innovation management is a form of management that ensures optimal use of human creativity, skills and knowledge in developing innovations and facilitating their use and protection for mutual benefit of individuals, institutions and firms.

The basic criterion in an innovation is novelty, which should provide some unique characteristic on the product or service. This makes innovation different from invention, which refers more directly to the creation of the idea or method itself.

Innovation differs from improvement in that it refers to the notion of doing something different rather than doing the same thing in a better or different way.

Innovations can be transformed into tangible assets that generate income. This is achieved when they are patented or registered as copyrights, which make them legal entities that can be traded. When such steps are taken regarding the intellectual property behind the innovations, they become important assets for individuals, institutions, firms and countries.

They contribute in driving economic growth and helping firms to remain competitive especially when they continuously roll-out more innovations. Therefore, safeguarding the innovative capacity of the manufacturing and service industries is of utmost importance for institutional managers, politicians and managers.

In agricultural production and natural resources utilization, innovations help spur production levels and improve farm income. Increased creativity in agricultural production systems and development of new plant varieties and innovative propagation techniques is contributing to improvement in farm yields. In the Information and Communication Technology sector, new ideas and products have led to faster provision of services especially in the money transfer and banking sectors.

The Economic pillar of the *Kenya Vision 2030* has identified the manufacturing sector as key in Kenya’s development process in national, regional and international markets.

Innovations in this sector will result in production of unique products and services that will spur growth in the economic sector. The focus on training of engineers and technicians in this sector has also been emphasized in the *Vission*. This therefore makes the emphasis on mentoring of students and staff to generate innovations at DeKUT a key contribution in attaining the expected *Vission* outputs.

DeKUT’s strategy in enhancing innovation for industrialization

As part of the purpose of establishing the Dedan Kimathi University of Technology to promote research, training and technology transfer, the university focuses on the promotion of innovations through its various programmes and at the School of Engineering.

Staff and students are therefore mentored in operational processes of innovation and emphasis is also placed on the student’s ability to analyze and re-design tools and equipment, processes and services for maximum effectiveness and efficiency.

The University has a division of Research, Technology Management and Community Linkages with research and innovations management as one of its core mandates and has created an Innovation Committee to strengthen the participation of staff and student in idea-generation. Training for staff capacity on innovations management has focused on patents management and the process of patenting and copyrights management.

The Community Linkages Section of the Division has established mechanisms of ensuring that information available on innovations are shared with communities. Communities may also initiate creative ideas and innovations.

Innovations and business:

Innovators have an idea which can be developed into a tangible product or process and they create a new product from new technology, services, product attributes, or unique combinations of resources, which successfully penetrate the market, create a market niche and build customer franchise. They can be incremental or radical innovations which require behavioural change from customers and users of the products.

Many firms try to keep pace with innovations in the business environment. Common practice in today’s business environment involves the external acquisition of technology in close collaboration with customers, suppliers and competitors.

Open-innovation pays attention to other forms of new business development, including entrepreneurship and new venturing, that is, how established firms spin-off promising business initiatives.

Developing successful innovations involves many challenges especially for institutions and incubator programmes.

Today innovation requires collaboration between universities, industrial research agencies, manufacturers, suppliers and even consumers as group or individuals.

The DeKUT has not been left behind in seeking strategic collaborative alliances to augment innovation and has therefore entered into Memorandums of Understanding and Agreements with such strategic partners in areas of Mechanical Engineering, Tool and Equipment manufacture and remanufacture, development of new IT programmes in health and services sector, among others. The positioning of the university in innovations generation and contribution is now squarely defined and will ultimately raise the caliber of engineers from this university!
DeKUT UNIVERSITY LIBRARY Striving to Achieve its Mission
By Fredrick Otike

“The world of books is the most remarkable creation of man!”

Nothing else that he builds ever lasts as long: Monuments fall, nations perish, civilizations grow old and die out, and after an era, new races are born, grow and build. But in the world of books are volumes that have seen this cycle happen again and again as the books live on; still young and fresh as the day they were written; still telling men’s hearts of other men who are centuries’ dead. (Clarence Day).

Libraries facilitate the transformation of knowledge stored in books into thought. A library therefore exists to provide information essential for the purpose of an organization. This information makes research possible in every department of intellectual life.

The question is whether in fact man’s cultural advancement came as a product of the knowledge preserved in the form of libraries or whether cultural advancement produces libraries? Another question is whether we have libraries because the country needs them or if they exist due to individual’s effort? Which one came first, libraries or cultural progress? What is more clear however, is that as soon as man came into existence, he started creating culture and when libraries came into being, they preserved man’s knowledge, thus facilitating creation of culture and improving on the succession of culture. Some have described the library is an arsenal of liberty.

Dedan Kimathi University of Technology library’s primary responsibility is to assist students and staff in the process of transforming information into knowledge. It has striven to be the centre of information and knowledge to the community.

The library currently boasts a vast collection of about 26,000 volumes of hard-copy books that can be accessed by the community within and outside of the university. This collection of resources has grown in less than two years and enhances education and the promotion of research. The library is fully-automated and uses commercial software called Mandarini and this enables it to offer effective, efficient and prompt service delivery to students and staff. Currently, the library catalogue can be accessed from any computer within the university.

The library also has access to over 500,000 (five hundred thousand) e-books and e-journals which can be accessed both within the campus and off campus.

E-books and their importance to DeKUT students and Staff

With the advancement of technology, libraries are changing from being merely warehouses to becoming information portals with the use of e-resources. E-books are easy to access and provide hyper-connection with other books. They are also less likely to be lost, stolen, or damaged.

E-books also offer instant service and assistance to library users. E-resources reduce frustration and dissatisfaction by library users. It is therefore as a result of these challenges that the Dedan Kimathi University of Technology has invested so much in ensuring that library users can have access to e-books, which can be accessed on and off campus.

E-book technology is just beginning to be explored. Due to the space limitations faced by many libraries, e-books appear to be an efficient means to store and organize information. Thousands of books can be stored in just one computer that can be accessed by many people. They provide users with up-to-date content and are being more frequently accessed than regular book collections especially for non-resident students and staff in institutions.

Dedan Kimathi University of Technology Library is user-centered therefore students and staff members are always advised and encouraged to express their information needs to the library as they are the beneficiaries of these information resources.

The writer of this article is the Head Librarian at the Dedan Kimathi University of Technology.

E-LEARNING
By Paul Kihara

E-learning, also referred to as computer-based training (CBT), Internet-based training (IBT) or Web-based training (WBT), includes all forms of electronically-supported learning and teaching, including educational technology.

The information and communication systems, whether networked or not, serve as specific media to implement the learning process.

E-learning often involves both out-of and in-classroom educational experiences via technology applications and processes such as Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, and streaming video and audio.

In the Dedan Kimathi University of Technology, the e-learning set up can be described as a blended learning which is used to support classroom delivery.

The DeKUT E-learning Centre has developed and availed to on-campus students a blended learning portal that provides several resources such as course notes, past papers, e-books, e-journals, e-library catalogues, the Encyclopaedia Britannica, free online courses (links to EDX and Coursera) and over 150 open-coursewares.

The Centre has also trained over 3000 users (students and lecturers) on how to use the platform of e-learning providing user-support with respect to the portal and issuing of projectors and the video-conferencing facility as part of its day-to-day operations.

As part of the preparations towards establishing a DeKUT Centre of Open Distance and E-Learning (CODEL), the Centre has drafted supporting documents such as the proposed, E-learning Policy and the Content Development Contract.

Benefits of E-learning

Online-learning is an education solution for individuals who cannot fit into the normal classroom setting due to barriers of space, time and age. Online access is also seen as a solution to geographic location obstacles. Through it, students are able to download all materials needed for their classes including lecture notes, assignments, and additional study materials.

Some learners prefer a ‘pull’ as opposed to a ‘push’ learning style that is provided by a CODEL. Since all
How DeKUT e-learning Portal (MOODLE) is structured:

The different schools have course categories which include specific units. Classes have been assigned to their respective cohort and every student belongs to a specific cohort. Cohorts are enrolled at every start of the semester and students are automatically or manually added to their respective cohorts. Lectures can add the necessary materials to the unit they are teaching and can edit what is in the portal by use of user names and passwords. Students can download materials from the e-learning portal and the administrators also have rights to update the materials to their relevant units. All students and lecturers have accounts that they can log into. When students log in, they only see the units they are doing in that semester. When lecturers log in, they only see the units they teach.

During rainy season, cold winters and thunderstorms, individuals tend to cancel classes, but with e-learning, a student can study at their own convenience at home as long as they have Internet access. This option is therefore especially useful for students who are on a tight study schedule.

classes are online or distance, students will not have to attend classes in designated classrooms, which makes scheduling of events in their life much easier and convenient.

Lecturers who teach our online courses or distance-learning are often the same lecturers you would get if you took the face-to-face course!

Tuition at online and distance schools is typically less costly compared to that of a traditional school. According to the Communications Commission of Kenya, the Internet penetration rate in Kenya stands at over 6.5 million up from 5.4 million during the 2010/2011 financial year. This actually represents an estimated number of 17.38 million Internet users in the country. This reflects the fact that there is sufficient technology power to support distance and e-learning in the country.

The Institute of Food Bioresources Technology at DeKUT was established to promote appropriate technologies and value addition in food processing, which in-turn increases the quality of food and nutrition security.

The Institute offers training in Food Science and Technology in the Food Technology Centre. It also offers consultancy and extension services. In line with Kenya Vision 2030, the Institute focuses on education and research, industry linkages, and consultancy and technology transfer. Graduates from the Institute are equipped to address the continually changing market demand for novel, nutritious, safe and convenience food products. They are trained to develop new technologies for value-addition with a focus on coffee, dairy, meat, fruit, vegetables and traditional crops and transfer the same to the relevant sectors. The strategic research areas/themes in the Institute include:

- Coffee technology
- Post-harvest technology
- Food process engineering
- Food safety and quality assurance

The Institute is in the process of establishing a Model Coffee Technology Centre that will serve as a reference point to the Kenyan coffee sector, as well as address value addition for the entire coffee-value chain through training, research and technology transfer.

Vision

To be a premier Institute of Food Bioresources Technology in academic excellence, research, innovation, product development and technology transfer for food and nutrition security.

Institute mission

To educate undergraduate and graduate professionals in Food BioResources Technology, who will apply research, innovation and value-addition and entrepreneurship skills to provide a safe and high quality food and foster economic development.

Constitution of the Institute

The Institute comprises of three divisions, namely:

- Department of Food Science and Technology
- Food Technology Centre comprising of various processing units for coffee, tea, dairy, fruit and vegetables.
- The Centre will generate income and will be used for transfer of technology.
- Consultancy, Linkages and Extension Unit.

Current programmes:

- Bachelor of Science in Food Science and Technology

Planned Postgraduate Programmes:

- Masters programme in Food Science and Technology:
  - MSc. Food Processing and Engineering
  - MSc. Food Safety and Quality Assurance
- PhD Programme:
  - Food Science and Technology.
CHARTER AWARD
Ceremony
The University is growing and its latter-day architecture houses key facilities that require particular mention including the Resource Centre Phases I and II, which house administrative offices, teaching and support staff offices, lecture rooms, laboratories, an auditorium and the university library. There is also the Advanced Design and Manufacturing Training Centre (ADMATC) which is the hub for training high-calibre Engineers. Also located in the ADMATC are the Water and Chemistry Laboratories.

The refurbished Chancellor’s Guest House that is home to the Institute of Tourism and Hospitality Management is attractively structured and has both a training wing for large-scale irrigation and farming activities. There is a 10-kilometer sewer line with two arms connected to the northern and southern ends of the university. The two arms are fully functional discharging into three oxidation ponds: the aerobic, facultative and maturation ponds.

The University has also established various centers aimed at addressing the research, innovation and development mandate of the University.

The University has well developed internal road networks that link the Northern end and Southern end of the University.

The Computer Laboratory has an entire Auto-desk Design Programme Suite, which makes it easier for our students and staff to design different objects in both two and three dimensions. The recent addition of an ANSYS programme gives our students and staff a platform to carry out computational fluid dynamics (CFD) thermo fluid field and also simulations in stress analysis. In 2014, the first batch of graduates from the department will enter the job market.

Under Vision 2030, the objective of training of engineers and technicians is to raise the competencies, and the number of engineers required to make Kenya a competitive industrializing nation. At DeKUT we do recognize the importance of this objective to Kenya’s current and future development and the significance of Mechanical Engineers’ involvement in the development of new systems and technologies, to impact the economy. To this end, the department is investing substantially in building its physical and human resource capacity so as to ensure the mechanical engineering education our students are receiving is of high standard, modern and in tune with the current and future industry needs as outlined in the Kenya Vision 2030.

Currently the department is the host of a pilot small-scale bio-diesel production plant project which is a Kenya Vision 2030 flagship project at DeKUT. In this project, the department is collaborating with Numerical Machining Complex (NMC), the Kenya Forestry Research Institute (KEFRI) and Kenya Industrial Research and Development Institute (KIRDI) to deliver on different aspects of the project. The project is meant to come up with a small-scale (1 ton per day) bio-diesel extraction plant to be deployed in rural parts of the country with sufficient non-edible biomass resources, which can be processed into bio-diesel. Besides the biodiesel flagship project, the staff and students in the department are working in collaboration with their counterparts in electrical and electronics engineering and physical sciences, in a laser technologies project. Just like the bio-diesel project, the laser technologies project is a Kenya Vision 2030 project meant to build the country capacity in harnessing the power of lasers in manufacturing, medicine and other sectors of our economy. Current ongoing research work in this area is on utilization of lasers in precision metal cutting, an important process in manufacturing.

To build Kenya’s capacity in construction and manufacturing, the Kenya Vision 2030 Secretariat is engaged in development of flagship projects under the manufacturing priority area. These include construction of...
small and medium enterprise parks in all the 47 Counties and the development of mini and integrated iron and steel mills in the country. To contribute to the Secretariat’s efforts, the mechanical engineering department in partnership with electrical and electronics engineering and mechatronic engineering departments are developing a locally manufactured electric motor.

The import of the project is that, the production machines and equipment such as lathes, drills, millers, shapers, grinders that will be used in the 47 industrial parks in the Counties will require electric motors to operate. Currently, motors used in the country are imported. Success of the project will be a boost to the Kenya Vision 2030 manufacturing goal and will likely spin-off research and production activities in metalurgy, control systems, copper wire manufacturing and motor assembling equipment.

At Dedan Kimathi we appreciate the importance of practical training for our students in order for them to learn how products and systems are made and assembled. Students in engineering departments in other institutions often graduate without ever having disassembled and reassembled anything in the course of their studies.

Practical training in Mechanical Engineering at DeKUT is achieved at three different levels: through practical/lab sessions, through 12 weeks internal attachment at our workshops and laboratories in their 2nd year of studies, and through two 12 weeks industrial attachments in their 3rd and 4th year of study. The core-objective of the practical training is to build the students’ ability to transfer engineering knowledge to rational problem-solving.

The DeKUT’s Mechanical Engineering Department is therefore actively participating in achieving the Kenya Vision 2030 goal of transforming Kenya to middle income economy status by the year 2030 by training qualified human resource (graduates), and developing technologies, systems, equipments and machines.

The author is the Chair of the Mechanical Engineering Department in the Dedan Kimathi University of Technology

BALANCING THE GENDER EQUATION

By Wanjiku Wanjiru

Dedan Kimathi University of technology realizes both men and women are needed for society to change, and this has led it to establish the Gender Office. The office is situated next to the Deans of Students’ office in the new mess.

The officer in-charge of the Gender Office is the Director of Gender and is appointed to the position by the Vice Chancellor DeKUT. The current Director of Gender is also an assistant lecturer from Institute of Geomatic, GIS and Remote Sensing (IGGReS). Dr. Wanjiku Wanjiru is the Deputy Director of the Gender Office.

The functions of the Director of Gender include:

a. Implement the Gender Policy to guide gender mainstreaming activities;

b. Undertake sensitization workshops in gender mainstreaming for employees and students. In the past one year the Gender Office organized seminars for all female students on moral and behaviour change.

c. Ensure compliance level with One Third (1/3) Gender Representation Policy on appointments, promotions and employment, committee representations as per the Kenya Constitution 2010. DeKUT is an equal opportunity employer, which encourages

d. Encourage female students to take up the courses which the society perceives to be male-dominated by offering scholarships to female students who excel in their studies.

e. Collects sex disaggregated data to guide in planning and programming in the University

f. Implement work place policy on gender based violence and sexual harassment.

g. Ensure affirmative action on gender responsive recruitment procedures.

h. Submit quarterly progress reports to National Gender and Equality Commission (NGEC)

i. Attend meetings on the awareness seminars for drugs and drug-abuse

The Gender Office also ensures equality to all persons as stipulated in Article 27 of the Kenya Constitution 2010. The office works together with the Office of People with Disability and also ensures that the students and staff from marginalized communities are accorded equal rights. To perform its duties well the office has representatives from all the DeKUT schools and departments.

About the author
The writer of this article is the Deputy Director, Gender, at the Dedan Kimathi University of Technology

BENCHMARKED WITH THE BEST the Institute of Geomatics, GIS & Remote-Sensing

Deciding how to plan a town, use land, model the environment and transport network and manage it, and where to locate a business can all benefit tremendously from geomatics and geoinformatics.

Architects, archeologists, crime simulators, pilots and marines know how important it is to use geomatics and geoinformatics to assess spatial dimensions, and to monitor and model, as well as in expertly manage natural resources. Geoinformatics is an important technology to decision-makers across a wide range of disciplines and industries. Many government and non-government agencies use spatial data for managing their day-to-day activities.

Variously referred to as Geomatic Engineering, Geospatial Engineering or Geospatial Sciences, it is a discipline focusing mainly on the data and information that is spatially referenced. It uses terrestrial, marine, airborne, and satellite-based sensors to acquire spatial and other data. It includes the process of transforming spatially referenced data from different sources into common information systems.

Geomatics is a new term for the older field of land surveying along with many other aspects of spatial data management. Following the advancements in digital data processing, the nature of the tasks required of the professional land surveyor has evolved and the term “surveying” no longer accurately covers the whole range of tasks that the profession deals with.

As our societies become more complex, information that is spatially referenced becomes more critical to decision-making. Geomatics engineers will be involved in a wide variety of information-gathering activities given that they design, develop, and operate systems for collecting and analyzing spatial information about land, oceans, natural resources, and man-made features. Traditional land surveying strand of geomatics engineering is concerned with the determination and recording of boundaries and areas of real property parcels, and the preparation and interpretation of legal land descriptions. The tasks more closely related to civil engineering include the design and layout of public infrastructure and urban subdivisions, and mapping and control surveys for construction projects.

In Kenya's quest to be a globally-competitive and prosperous nation with a high quality of life by 2030, applied technology is a critical component to meeting this market need. Both geomatic engineering and geospatial information science are technologies that can be applied to support a variety of aspects that support the Kenya Vision 2030 such as tourism, agriculture, and the protection and preservation of the environment, thereby enhancing the quality of life as outlined in the Kenya Constitution 2010 and in the draft national land policy.

Written by Dr. Daniel Karus; Ms. Eric Kathurima; Ms. Mary Mushatia; Ms. Josephine Wanjiku; Ms. Caroline Gikwa; Mr. Bartholomew Karus; Mr. Godfrey Mbadu, Mr. Arthur Sitabangi and Mr. Julius Nebuya.
Tourism and hospitality are fast-expanding industries in the world and important top foreign exchange earners for Kenya. However, economic benefits from the tourism industry do not normally trickle back to the local communities, and there is need for a new approach to develop skills on sustainability of the industry through training, sensitization of local communities to embrace community-based tourism ventures. In order to meet this need, the Dedan Kimathi University of Technology (DeKUT) launched a Bachelor of Science Degree in Sustainable Tourism and Hospitality Management, and to establish a Kimathi University Wildlife Conservancy and associated hospitality facilities.

The Academic Department has been operational from 2011 and today has 20 and 94 students for diploma and degree programmes. The Conservancy has been completed and 60 of 9 animal species have been trans-located to it. These animals have now settled down and are already breeding. The hospitality facilities are under construction and will be used for practical study experience by the students at DeKUT.

The Institute of Tourism and Hospitality Management (IToHM) comprises the following sectors:

- The Department of Sustainable Tourism and Hospitality Management.
- The Dedan Kimathi University Wildlife Conservancy.
- The Tourism/Hospitality business component of the Conservancy.
- The International Endangered Species Research Centre

The goals of the Institute of Tourism and Hospitality Management are:

- To streamline the management of the Conservancy and the academic department.
- To establish a vibrant income-generating enterprise for DeKUT through tourism and hospitality ventures.
- To establish a research facility to accommodate both local and international researchers on tourism, hospitality and ecosystem management in the Aberdares, Mt Kenya and the Laikipia area.
- To sensitize local communities to participate in community-based tourism enterprises.

Kenya’s new tourism policy has put emphasis on the involvement of the local communities in tourism, and the diversification of tourist activities by developing new tourist destinations. To achieve this, the emphasis is directed to sustainable tourism development as the core-component in this industry supported by expansion in the hospitality service sector. There is inadequate skilled manpower in this sector but the future of tourism in Kenya needs product diversification, opening up of new tourist circuits, promotion of domestic tourism and development of skilled manpower.

The Institute of Tourism and Hospitality Management will use the already-established Kimathi University Wildlife Conservancy as a field practical training centre where the community and academics will work. The Institute will work closely with the Mau Mau Education Centre.

The DeKUT BSc Degree programme in Sustainable Tourism and Hospitality Management will provide competence to service providers in this industry by training new entrants or upgrading skills of those who are already in the industry. Tourism is a complex industry governed by the laws of supply and demand. The training will therefore equip students with competence to take the client to appreciate the ecology, behaviour, and the tourism product’s interrelationship with the environment.
DEVELOPING A GREEN THUMB
The DeKUT Farm

Dedan Kimathi University farm was started in the early 1900s and helps the university generate income, as well as acts as a modern research facility.

The farm is effective for training students in biosciences, crop science, modern techniques in biotechnology, plant and animal genetics, and general animal production and veterinary science. The farm is run commercially and self-finances itself to function as a teaching and research resource. The farm is a 648 acre mixed farm of coffee, dairy and arable production.

Farm Workforce

The farm has 16 permanent workers, 4 contract employees and an average of 100 casual employees per day. The current farm manager is Peter Mwirigi and the majority of workers are engaged in the coffee unit (e.g. harvesting and pruning), while the rest are in horticulture, livestock and the maintenance of farm machinery and buildings.

Equipment on the farm

A variety of equipment is used on the farm including: Same tractors are used for spraying coffee to cutting and bailing hay for the dairy cows as well as plowing. There is also a disk plow, harrower, gyro mower, furrower, hay cutter, hay bailer, chemical sprayer, 3 trailers (1 dumping), chaff cutter and power saws.

COFFEE FARM

As part of a 3-year Strategic Plan, the three farm units have developed Business Plans to ensure sustainable and profitable production.

Irrigation system

The farm uses different irrigation systems for sustainable and timely drip irrigation kits to significantly increase production and water wasted through evaporation and runoff. In addition, the farm is exploring the option of installing sub-surface drip irrigation at Kigunyo block for the 8,500 Batian seedlings that will be planted in April. This will form the basis for future installation of drip irrigation to all the coffee blocks.

Acreage

The total acreage of the farm is 648 acres with 302 acres under coffee; the dominant variety being SL 28 with a few Batian and Ruiru coffee trees. Coffee production has fluctuated because of adverse weather conditions and poor management.

Coffee nursery

The farm, in collaboration with Coffee Research Foundation (CRF) started a coffee nursery in 2012 with the objective of producing high quality coffee seedlings to be used for gradual replacement of the old coffee trees. The nursery has a capacity of 70,000 seedlings with the current seedlings totaling to 46,493 (main varieties are Ruiru hybrid and Batian).

Coffee rehabilitation

The economical lifespan of a coffee tree is 25-35 years. Most of the coffee bushes in the farm are over 50 years old. As a result, they have exhausted their maximum production potential. In addition, majority of the trees have died due to senescence and diseases such as Armillaria mellea. This has led to poor production per tree and therefore the need for entire rehabilitation by planting new improved varieties.

DeKUT has embarked on a rehabilitation programme which will involve the entire replacement of the old trees with new ones. The total area earmarked for this rehabilitation is 34,314m². The seedlings are high quality Batian variety. This pilot project, if successful, will lead to the rehabilitation of the entire farm by the end of 2015.

Disease and pest control

Majority of the coffee diseases are fungal and are controlled by use of fungicides, insecticide and also by good husbandry practices. The common pests are the green scales, Kenya mealy bugs, berry borers, stem borers and leaf miners. These are controlled chemically. The farm encourages the use of predators in suppressing the pests as a form of biological control.

LIVESTOCK

The livestock section (started several decades ago after being bought from the White Settlers in the 1970’s. Several Friesian cows were brought mainly from Loisoi farm near Mt. Kenya and Marula estates in Naivasha and the focus became more business oriented away from domestic production. To-date, the section has continued to grow and diversify with the introduction of pigs, sheep, goats and poultry for profitable livestock farming.

This article was developed by: Mr. John Gathira, the Assistant Farm Manager Mr. Kyle Holland - Business Development Officer, Mr. James Kwango-Animal Health Technician and Mrs. Purity Thumbi - Horticulture Supervisor.

For additional information, please contact the Ag. Farm Manager, Peter Mwirigi (mwirigi@yahoo.com)
ACADEMIC PROGRAMMES

SCHOOL OF ENGINEERING
- Msc in Advanced Manufacturing and Automation
- Msc in Industrial Engineering and Management
- Bachelor of Science in Electrical and Electronic Engineering
- Bachelor of Science in Telecommunication and Information Engineering
- Bachelor of Science in Mechatronic Engineering
- Bachelor of Science in Mechanical Engineering
- Bachelor of Science in Civil Engineering

INSTITUTE OF GEOMATICS, GIS & REMOTE SENSING (IGGRS)
- MSc. in Geospatial Information Science and Remote Sensing
- Bachelor of Science in Geomatic Engineering and Geospatial Information Systems
- Bachelor of Science in Geospatial Information Science (4 years)

SCHOOL OF SCIENCE
- Bachelor of Science Actuarial Sciences
- Bachelor of Science in Industrial Chemistry
- Bridging Mathematics and Physics

SCHOOL OF BUSINESS
- PhD in Business Administration and Management
- Masters in Business Administration
- Master of Science in Economics
- Bachelor of Commerce
- Bachelor of Business Administration
- Bachelor of Science in criminology and security management
- Bachelor of Purchasing and Supplies Management
- Bachelor of Sustainable Tourism and Hospitality Management
- Diploma in Business Administration
- Diploma in Purchasing and Supplies Management
- Diploma in Sustainable Tourism and Hospitality Management
- Diploma of Business Information Technology
- Diploma of Business Administration
- Diploma of Business Information Technology (Stage I)
- Bachelor of Science in Information Technology (Stage I)
- Diploma in Information Technology
- Certificate in Information Technology

DEPARTMENT OF NURSING
- Bachelor of Science in Nursing Direct entry with K.C.S.E results
- Bachelor of Science in Nursing upgrading programme for registered Nurse/Midwife

INSTITUTE OF FOOD AND BIORESOURCES TECHNOLOGY
- PhD in Food Science
- Bachelor of Science in Food Science
- Diploma in Coffee Technology and Cupping
- Certificate in Coffee Technology and Quality Management

INSTITUTE OF TOURISM AND HOSPITALITY MANAGEMENT
- Bachelor of Science in Sustainable Tourism and Hospitality Management
- Diploma in Sustainable Tourism and Hospitality Management

INSTITUTE OF TECHNICAL AND PROFESSIONAL STUDIES
- Diploma in Clothing and Fashion Design
- Diploma in Furniture Technology and Interior Design
- Diploma in Building Technology
- Diploma in Metal Work, Welding and Design
- Certificate in Clothing and Fashion Design
- Certificate in Furniture Technology and Interior Design
- Certificate in Building Technology
- Certificate in Metal Work, Welding and Design
- ATC Level I (Intermediate)
- ATC Level II (Final)
- CPA Sec. I-VI
- CCNA I, II, III, IV

INSTITUTE OF GEOTHERMAL ENERGY, RESEARCH & TECHNOLOGY
- Msc in Geothermal Energy Technology
- Postgraduate Diploma in Geothermal Energy Technology

Members of the DeKUT’s Council

Dr. Dulacha Galgallo Barako
PS Ministry of Finance

Joseph Kinyua
Eng. John Kisenga

Mrs. Mercy Mwatua
Mrs. Sophia Yiega

Prof. Crispus Kiamba
PS MOHESI

Prof. P. N. Kioni - Ag . Vice Chancellor
Industrial Chemistry is the branch of chemistry which applies physical and chemical processes towards the transformation of raw materials into products that are of benefit to humanity. The course equips graduates with knowledge of engineering, chemical processing, economics and industrial management. Modern industries are using increasingly sophisticated chemical procedures; this has led to industrialists becoming more concerned about health hazards and safety factors. These industries need better-trained chemistry technicians, managers and practitioners. The function of an industrial chemist is to be able to handle industrial practices, processes and problems in various domains. Whereas the chemical engineer deals with the design and operation of plants and equipment of chemical industry, the industrial chemists are concerned with the management of the chemical industry by optimizing and monitoring the fundamental chemical processes.

Industrial chemists are employed in the process industry, fertilizer production industry, plastics industry, pulp and paper industry, mining industry, consumer industry, oil and petroleum industry, textile industry, dyes and paints industry, cosmetics industry, cement industry, glass industry, pharmaceutical industry, government departments, parastatals, research and development institutes, production, biotechnology, quality control, process industry, water purification and wastewater purification engineering. The course is therefore exceptionally marketable but more students need to take up the course in Kenya.

Highly Upwardly-Mobile Career

Chemistry plays a central role in the modern world economy. In the last century, chemistry had a key role in diverse fields such as development of drugs in medicine, pesticides and fertilizers in agriculture, food technology, textile industry, energy, transport and electronics etc. The chemical industry has grown rapidly in the recent past in the developing countries and is crucial in providing employment to millions of people.

By 2010, the global chemical industry stood at $4.12 trillion and it continues to grow. A chemical industry may be described as a company that uses chemistry and manufactures chemicals. Their raw materials include oil, natural gas, air, water, metals, minerals, etc. The outputs of chemical industries are chemicals and their derivatives.

The author is the Head of the Chemistry Department at DeKUT, and holds a PhD from the Nelson Mandela Metropolitan University.

By Dr. Douglas Onyancha

The university runs a vibrant Sports and games department. Modern facilities have been put in place to develop and nurture sporting talent.

The sports department ensures that students and staff have a chance to “let off steam” after a hard day’s work.

The following are the registered sports clubs as at January, 2013:

1. Soccer
2. Volleyball (M)
3. Volleyball (W)
4. Basketball (M)
5. Basketball (W)
6. Hockey (M)
7. Hockey (W)
8. Netball (M)
9. Netball (W)
10. Softball
11. Handball
12. Cross country
13. Track and field
14. Scrabble
15. Chess
16. Karate
17. Taekwondo
18. Shotokan RYU
19. Table Tennis
20. Tennis
21. Badminton
22. Swimming
23. Rugby

Major Achievement 2013

Our teams have participated in both friendly matches and league tournaments including the Rugby team which finished in the fifth position in Universities’ league. Another good team is Hockey (Men) which plays in the National Premier League.

Tournaments Held within the University

1. Nyeri technical
   Soccer - DeKUT 11 vs. KEMU 09
   Volleyball - DeKUT 45 vs. KEMU 20
   Netball (W) - DeKUT 26 vs. KEMU 09
   Rugby - DeKUT 2 vs. KEMU 09

2. Nginyo TTC
   Soccer - DeKUT 1 vs. STIMA 3
   Basketball (M) - DeKUT 42 vs. STIMA 3
   Swimming - won Relay

3. Kagumo TTC
   Netball (M) - DeKUT 19 vs. Kagumo 08
   Soccer - DeKUT 5 vs. Kagumo 09

4. Kenyatta University
   Soccer - DeKUT 11 vs. K U 09
   Netball (M) - DeKUT 22 vs. K U 32
   Netball (W) - DeKUT 14 vs. K U 24
   Swimming - won Relay

Basketball (M) - DeKUT 42 vs. K U 34

Rugby League matches within

1. DeKUT 11 vs. KEMU 09
2. DeKUT 13 vs. CUEA 10
3. DeKUT 15 vs. Thika 38
4. DeKUT 15 vs. CUEA 10
What to do when someone is having an Epileptic seizure.

By Dr. John Macharia Medical Officer DeKUT

1. Loosen restrictive clothing, roll the person on side to prevent aspiration, place a small pillow under the head and ease from a standing or sitting position to the floor.
2. Do not move the person unless he or she is in immediate danger.
3. If the person is unconscious, make sure nothing is obstructing the nose or mouth. When you are watching an epileptic attack you should stay very calm and try not to panic.
4. You should not place a finger or other object into the person’s mouth to protect or straighten the tongue -- it is unnecessary and dangerous.
5. Do not perform artificial respiration during a seizure, even if the person is turning blue. Most seizures are over long before brain damage from lack of oxygen begins.
6. You should not try to hold the person still because you may injure the individual or yourself.
7. If the person has vomited, you should roll the person on his side so that any fluid can easily flow out of the mouth and not obstruct breathing.
8. If the person has a seizure, they may not hear you when you are speaking to them.
9. Do not give the person anything to eat or drink until the person is fully recovered.
10. Do not give the person medication by mouth until the seizure has stopped and he or she is completely awake and alert.
11. You should be calmly reassuring.
12. Stay with the person until recovery is complete.
13. If a seizure last more than five minutes get Medical Help.
14. It is important to monitor vital signs and neurologic status if you have the medical expertise to do so.
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