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A publication of the Office of the Vice-Chancellor



TU-K REGISTERS RECORD NUMBERS OF STUDENT ADMISSIONS

Making it the largest Engineering School in East Africa, by numbers

PRESIDENT KENYATTA
PRAISES TU-K'S **BIO-DIESEL
PRODUCTION INNOVATION...**
... AS GOV. KIDERO **ENJOYS
A GREEN RIDE**

TU-K SEEKS
PARTNERSHIP WITH
KENYA VEHICLE
MANUFACTURERS

Tu-K Hosts a **Leading
Jazz Band From the US**

PRESIDENT KENYATTA PRAISES TU-K'S BIO-DIESEL PRODUCTION INNOVATION

The Technical University of Kenya (TU-K) took part in the just concluded 11th Exhibition for the Kenya Universities organized by the Commission for University Education (CUE) at the Kenyatta International Conference Centre (KICC) in Nairobi. The event whose theme was, “Celebrating Expansion of University Education through Diversity and Integration,” was officially opened by the Cabinet Secretary in the Ministry of Education Prof. Jacob Kaimenyi.



The Chief Guest President Uhuru Kenyatta commended the universities efforts in sustaining quality education saying he was pleased with innovations from different universities among them the Technical University of Kenya. In a speech read on his behalf by Prof. Kaimenyi, the president said, “I am pleased to note that a recently chartered public university is now producing bio-diesel from waste vegetable cooking oil. This project, though still in its formative stages has produced fuel that can be used in any diesel automotive engine in its pure form or blended with petroleum-based diesel,” he said adding that it is initiatives such as these that rightfully place Kenyan universities on the global map of innovation.

On his part, the Cabinet Secretary called on universities to identify and build on students’ talents, adding that the brilliant ideas students exhibited should be translated into innovations and products.

Both public and private Universities had an array of activities. All Departments and Schools of TU-K were well represented. The university showcased her programmes and innovations. The TU-K’s exhibition stand was flooded with inquisitive visitors wishing to pursue courses in various disciplines. It stood as a classic example of the interface between academia, students, business community, media and society in providing an interactive platform for all stakeholders and partners. The visitors commended the marketability of our academic programmes and the suitability of our graduates.

Prof. Kaimenyi led a delegation of Government Officials and Commission for University Education to TU-K stand. He commended the University for Exemplary work in innovation and academic. Among high profile names who visited our stand were Nairobi Governor Dr. Evans Kidero and Kenya Airways Managing Director/Chief Executive Officer Dr. Titus Naikuni.

This year’s exhibition theme was meant to celebrate the central role that universities continue to play in the socio-economic development of the nation.



Welcome to the third edition of the TU-NEWS. A magazine that gives you in-depth stories about the first Technical University in Kenya. We are glad you are reading!

When the Technical University of Kenya (TU-K) became a fully fledged University, there was a need to make major appointments that would help steer the university to greater heights. TU-K advertised for positions of the Vice-Chancellor (VC) and Deputy Vice-Chancellors (DVCs). In line with the competitive process provided in the Universities’ Act 2012 and the Charter the Vice-Chancellor and the Deputies have been appointed.

The University has also recruited some of the best academic and non teaching, in addition to the already existing staff, in an endeavour to match the status of the newly acquired university. TU-News takes this opportunity to congratulate the Vice-Chancellor, the Deputy Vice-Chancellors and all other newly appointed members of staff. We wish you all the very best in the execution of your duties.

This year, the university has recorded the highest number of admission of students in the history of the institution. Quite a good number of students were admitted through the Joint Admissions Board (JAB) and others are on Self Sponsorship Program (SSP). While congratulating first year students during orientation, the Vice-Chancellor, Prof. Aduol reminded them of the enormous responsibilities ahead and therefore the need to work extra hard in their respective studies.

Recently, we took part in the 11th Exhibitions for the Kenya Universities where we captured the president’s attention through our innovations. In his speech, he mentioned that he was proud of our bio-diesel production which truly places us on the global map of innovation. And yes, we take pride of other achievements and say, if we fail to touch the sky, then we will fall for the stars.

TU-K recognises the opportunities presented by devolution. As a University of technology, we are gearing up to opening more institutions across the country especially in marginalised areas to boost education prospects.

We continue to strengthen our collaboration with various Institutions, for mutual benefits and enhancement of the practical skills of our students. Such an engagement saw an octet from the Smithsonian Jazz Masterworks Orchestra from The Smithsonian Museum, Washington, D.C. in the USA, on invitation by the US Embassy, visit the TU-K University and conducted a lecture-demonstration as well as performed for the management.

TU-KNEWS joins the world in mourning the fallen hero Nelson Mandela. May Madiba’s soulrest in eternal peace.

Innovativeness is a major guiding factor in the research at TU-K and therefore influences every aspect of the Institution. The launch of the Association of Engineering Students (AES) of the Technical University of Kenya and Science and Technology Students Association (STSA) has further boosted our students’ creativity, research and innovations. These and much more will spice up your reading. Enjoy.

Anaya

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• DECEMBER 2013

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Vice-Chancellor Addresses New Students

Prof. Joseph Kiplang'at Joins TU-K... as Deputy Vice-Chancellor, Administration, Planning and Infrastructure

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TU-K Spearheads Implementation of the TVET Policy

TU-K Hosts A Leading Jazz Band from the US

The Sky is the Lower Limit, Our Alumni Affirm

Collaboration between TU-K and KVM to See Reviving of a Training School

How about a Technical University in Isiolo County?

The Long Awaited Students Constitution is Adopted!

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FOREWORD

From the Vice-Chancellor

The Technical University of Kenya has a long and chequered history. The history dates back to Kenya's preparation for independence when the institution operated as the Kenya Technical Institute at the Royal Technical College of East Africa. It has been an integral part of the country's development and for this reason has evolved to cope with the challenges that have come as a result of the growth of the nation. It operated for a long time as the Kenya's premier polytechnic before it was elevated to a degree awarding institution in 2007 when it became the Kenya Polytechnic University College. The granting of charter in January, 2013 therefore marked a major milestone in the development of the institution as well as of the nation.

The Technical University of Kenya has been established as the first technical university of the country as envisaged in the new laws governing higher education and in line with Vision 2030. This is a new frontier in university education in our country and the region at large, and the university is expected to provide leadership for this effort. The Government and other stakeholders expect that this University will provide the necessary human capital with world class technical skills to address the development challenges of the nation. Other than this, the institution is also required to mentor other technical institutions and develop benchmarks that would establish international quality standards for technical education in Kenya. These are not enviable responsibilities for an institution that has just joined the league of universities and now expected to operate in the competitive and elitist environment of global giants like the Massachusetts Institute of Technology.

It therefore became imperative that the Council reorganises the operations of the institution to reflect the new status and respond to the new challenges that have come with the new mandate. Council has thus worked with the management of the university in consultation with the stakeholders to establish an organisational structure that would enable the university to attract the human resource that have the unique attributes required to lead and manage the institution in pursuit of its vision and fulfilment of its mission. The university has since appointed top scholars to senior positions of management. This team will drive the mandate of the university and the desire of the Government to create an institution of higher education that nurture a special and new breed of graduates with practical skills to join the market as doers of things and providers of solutions to employers.

As you will notice, we have witnessed tremendous growth both in student population as well as infrastructure. We have also intensified our local and international networks and linkages so as to remain competitive and global in character. We still remain the Secretariat of the Commonwealth Association of Polytechnics of Africa (CAPA). The institution organised a conference for all the Technical Training Institutes in Kenya to design strategies of strengthening technical education and training. The University has now joined the Association of Commonwealth Universities (ACU) and in this regard, the University was invited and participated in the just concluded Centenary Celebrations in London.

I wish to take this opportunity to thank the Council, Senate and University Management Board for working tirelessly to conclude the process of transition from a University College to a fully fledged University in time. Our stakeholders and especially our partners in the industry who have spared their time to offer invaluable advice and walk with us this far deserves praise. We are aware of the more difficult challenge of retaining the best brains that we have been able to painstakingly recruit as our staff over the transition period. However, I wish to assure our stakeholders and especially the Council and Government that the University Management is equal to the task and will deliver on its obligations, more so to staff. We are confident that our vision is attainable; TU-K will be a top rated university of technology!

Prof. Dr.-Ing. F. W.O. Aduol,
VICE-CHANCELLOR

VICE-CHANCELLOR ADDRESSES NEW STUDENTS

TO ACHIEVE YOUR ACADEMIC GOALS, YOU MUST STUDY DILIGENTLY



Orientation Schedule

The University conducts orientation for freshmen with the aim of imparting information necessary for their settling at the university. Prior to the address by VC, the students were taken through topics such as; Behaviour Change Communication in an academic environment, Managing mental health, Alcohol, Drug and substance abuse and dependency, Enhancing career progress and effects of HIV/AIDS pandemic.

Other issues addressed by senior officers of the university included; Orientation on Academic Programmes Management, ICT service provision, course record management, examination regulations and certification, general academic policies, application for students' identification cards among others.

This year, the University has recorded the highest number of admission. More than 1,800 students have been admitted through the Joint Admission Board while 4,200 are on Self Sponsorship Program (SSP) for academic year 2013/2014.

During the 2013 orientation of the first year students, the Vice-chancellor Prof. Francis Aduol started by congratulating them for joining TU-K, saying it was a great achievement in their lives hence they should count it as a blessing.

"I would like to congratulate you and extend a very special warm welcome for joining this institution. Consider yourselves fortunate for being among the very few students who got admission to an institution of higher learning of this nature," he said reminding them that they have enormous responsibilities ahead and are role models to other students aspiring to join universities. Prof. Aduol went further to explain the core mandate of the institution and the management structures, the

back ground which entails transit from a polytechnic to a university college and finally to a fully-fledged university.

The VC urged them to take keen interests in various disciplines in which they will be taught. He added that the University education will broaden their thinking and mould them to become analytical and responsible citizens. He challenged them to be ready to take up new courses and learn new things which will equip them with necessary skills required for university education.

"I would urge you to study diligently and utilize all available resources. Your efforts will determine whether you will complete your course or not. Please do not ignore other aspects of development the university presents," he said and continued, "The University has many attractions and distractions hence the need to organize your time very carefully."

The VC reminded students that the University has established various institutions to enrich their lives and assist them

learn with pleasure. He added that the institution offers guidance and counseling for both academic and social aspects. "From research findings, teaching experience and student reports, we know that students all over the world experience major problems in coping with studies at the post secondary level particularly at the university level," he said noting that this was due to the difference in study methods used at school and those used at the tertiary or university level.

He told the students that they will be compelled to do a large volume of reading with little or no supervision from lecturers. "You will find new subjects and new approaches to other subjects which will be unfamiliar to you. The courses will equip you with skills necessary for life outside the university, particularly the job market," he said.

He also advised them to choose their friends wisely, be vigilant of conmen and protect the image of the institution at all cost. He emphasized on discipline and diplomacy as key to engaging the management and avoid riots whenever there is a problem or misunderstanding. "Today, integrity counts before one is offered any appointment. Remember history repeats itself, you will therefore be judged according to your deeds while you were studying here," he disclosed. **TN**

TU-K GETS A NEW VC AND DVCS

PROF. ADUOL APPOINTED NEW VC

Following the advertisement of the position of the Vice-Chancellor and the interviews as per the Charter, Prof. Jacob T. Kaimenyi, Cabinet Secretary for Education appointed Prof. Francis Aduol the first Vice-Chancellor of the Technical University of Kenya.

Prior to his appointment, Prof. Aduol served as the University's VC in acting capacity following the award of the charter by the then President Hon. Mwai Kibaki. Prof. Aduol was appointed the first Principal of the Kenya Polytechnic University College in October 2008. He holds a B.Sc. Engineering degree in Surveying and Photogrammetry, MA in Economics and M.Sc. degree in Surveying both from the University of Nairobi, and Dr.-Ing. in Geodesy from the University of Stuttgart in Germany.

Prof. Aduol has had an illustrious career as an academic and in university administration. He is a full Professor of Surveying of the University of Nairobi. He has served previously at the University of Nairobi as Chairman of the Department of Surveying; Dean, Faculty of Engineering; and Principal, College of Architecture and Engineering.

He is a member of the Institution of Surveyors of Kenya and a Licensed Surveyor in Kenya.

Others appointed in the positions of Deputy Vice-Chancellors (DVCs) are; Prof. Paul M. Shiundu, Academic, Research and Students (ARS), Prof. Suki K.K. Mwendwa, Technology, Innovation and Partnerships (TIP); and Prof. Joseph Kiplang'at, Administration, Planning and Infrastructure (API)

TN



PROFILE OF PROF. JOSEPH KIPLANG'AT

**DEPUTY VICE-CHANCELLOR, ADMINISTRATION,
PLANNING AND INFRASTRUCTURE**

After the award of the Charter in January 2013, and in line with the new University organization structure, Council appointment Prof. Joseph Kiplang'at as Deputy Vice-Chancellor in charge of Administration, Planning and Infrastructure. Prof. Kiplang'at brings a wealth of experience to the Technical University of Kenya. He is tasked with overseeing the following departments: Human Resource Services, Health and Wellness Services, Properties and Facilities Management, ICT Services, Supply Chain Operations and Planning and Institutional Reporting. His vision is efficient and timely delivery of appropriate services and facilities to meet the needs of the faculties and departments and as envisioned in the strategic objectives of the University.

Prof. Kiplang'at is the immediate former Director of Moi University, Nairobi Campus, a position he held since January 2006. He was the founder of the Campus with an initial population of 138 students enrolled in two programmes. Through his able leadership the campus witnessed tremendous growth to a population of over 5,000 students enrolled in 62 academic

programmes. Prior to that, Prof. Kiplang'at was the Head of Department of Library, Records Management and Information Studies, in the School of Information Sciences, Moi University. He also worked at Egerton University and the University of Nairobi. Prof. Kiplang'at has over twenty years of experience in teaching and has supervised and graduated over thirty master's students and six doctoral students.

He is a holder of Bachelor of Science in Information Sciences and a Master of Philosophy in Information Sciences from Moi University and a Ph.D. in Library and Information Sciences from University of Zululand, South Africa. Prof. Kiplang'at is an accomplished academician and has published over twenty articles in refereed journals, fifteen articles in conference proceedings, and has presented over thirty papers in conferences and seminars. He has also edited one book and contributed chapters in various books. He has also been a visiting Scholar at University of South Africa (UNISA), Department of Information Science and an external examiner in a number of universities locally and abroad

TN

OUTREACH PROGRAMMES

TECHNICAL UNIVERSITY OF KENYA DONATES SCIENTIFIC EQUIPMENT TO MARANDA HIGH SCHOOL



Prof. Suki Mwendwa, DVC – TIP (centre), Maranda High School Principal, Mr. Boaz Owino (in striped) shirt and Prof. Dorcas Yole, Director – COP, TU-K (in blue blouse) join students and staff of Maranda in displaying the donations

“You have had a sterling performance over the years and even pulled a major surprise when you toppled renowned academic giants. You have earned yourself a name in the national and regional platform. We are very proud of you and will support you in any way.”

Prof. Suki

The Technical University of Kenya (TU-K) Deputy Vice-Chancellor in charge of Technology, Innovation and Partnerships Prof. Suki Mwendwa recently challenged students of Maranda High School in Siaya County, to maintain their good performance record in academics. The School was ranked the best in the country during the 2011 Kenya Certificate of Secondary Education (KCSE) beating other academic giants like Mang'u High School, Alliance and Starehe Boys Centre.

“You have had a sterling performance over the years and even pulled a major surprise when you toppled renowned academic giants. You have earned yourself a name in the national and regional platform. We are very proud of you and will support you in any way,” she assured.

She advised students to work hard, take their work seriously, revise thor-

oughly and consult their teachers saying it is one way of ensuring that they improve their grades and therefore meet the enrolment requirements of the university.

To ensure that they become well rounded professionals, the DVC emphasized on the need of choosing subjects wisely since it would determine their careers. She also noted that it was important to embrace other disciplines for instance pursuing arts which form a fundamental pillar in communication and socialization. Prof. Mwendwa commended the School for maintaining high discipline which she said, is the cornerstone of academic excellence.

Prof. Mwendwa was speaking recently during a presentation organized by the TU-K Campus Outreach Programme

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TU-K'S OUTREACH PROGRAMMES CONTINUE...

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(COP), 'Demystifying Science', a talk on the promotion of Science subjects aimed at encouraging Secondary school students to develop interests in mathematics and science subjects. The presentation helps students see science as normal activities undertaken on a daily basis. As part of TU-K's Corporate Social Responsibility, she handed the school donation, comprising of projector, laptop, projector screen and an amplifier, which the school had requested for. "We hope that the equipment will help you in your studies and that you will be able to achieve good grades. You will be able to acquire practical skills that are relevant to the consumer needs," she said.

The DVC was accompanied by the Director (COP) Prof. Dorcas Yole and five lecturers involved in Campus Outreach Programmes. They were; Benter Onyango (Biology), Mwanza Kimei (Chemistry), Esther Njue (Mathematics) Sam Njuki (Physics, Engineering and IT) and Joyce Asuke (Other courses offered at TU-K). The technical staff comprised of Juma Gakesho and Lucy Anaya. Prof. Yole gave students tips on how to succeed in studies for instance taking breaks in between their reading, exercising to help their brains get enough oxygen and ensuring they understand the subject matter through reading and understanding their notes and material in textbooks.

The Principal of Maranda Mr. Boaz Owino, expressed his gratitude saying that TU-K was the first University to extend such a gesture to his School. He said he welcomed any other institution of higher learning which was ready to mentor his students. The Staff and students assured the gathering that they will maintain their position in the country **TN**

CAMPUS OUTREACH PROGRAMMES FOR THE YEAR 2012-2013

'TO THE GRASSROOTS'

*S*ix needy schools were selected from different counties which neighbour Nairobi, for Campus Outreach Programmes (COP). A presentation on Demystifying Science was made to the students who realized that we encounter Mathematics, Physics, Chemistry, Biology and ICT in everyday life. Students were informed of the courses and careers they would take once they study science subjects. They were also informed of other non-science courses offered at TU-K.

The students had an opportunity to ask questions on subjects and the financial assistance offered by the universities among other things. The COP team responded to the issues raised. Each school received ten (10) hotplates for Science laboratories/ Home science kitchens. The hotplates had been donated to the TU-K Directorate of Industrial and Professional Partnerships by Hotpoint Appliances Ltd.

Some of the schools visited included; Ruthimitu Girls Secondary School, Nairobi County, the school serves the "a rural" community and has about 300 students. The girls had been using charcoal burners for Home Science practical and therefore were grateful for the donation.

Other Schools included; Kiandu Mixed Secondary School, North Tetu, Nyeri County, Mbaikini Secondary School, Machakos

County, Ngwata Mixed Secondary School, Makueni County, Kamunyaka Mixed Secondary School, Kinangop, Nyandarua County and Enoomatasiani Girls Secondary School, Ngong, Kajiado Country .

Volunteering and Community Responsibilities

Two voluntary activities were carried out, training needy communities in; computer packages at Kibera District Commissioner (DC's) office, and software time-tabling in Ruthimitu Girls Secondary School, Nairobi County.

The DC's office was identified as one of the local administrative office with computers but having staff who were not well trained in computer packages. The DC nominated six clerks to be trained, provided a room for training and gave enough computers. The trainers from TU-K covered the following topics; Introduction to computer, Microsoft Word & Mail Merging, Microsoft Excel and Microsoft Power Point.

In Ruthimitu Girls, the Principal nominated four teachers in charge of timetable. They were trained and are currently using the software in preparation of their school timetable **TN**



Prof. Dorcas Yole (standing) and Mr. Dickson Wambaa (right), lecturer TU-K, during a time-tabling software training for teachers at Ruthimitu Girls Secondary School

UNIVERSITY INTENSIFIES RESEARCH THROUGH COLLABORATION

Programmes in Integrated Water Resources Management



By: Prof. Paul M. Shiundu Deputy Vice Chancellor – Academic, Research and Students

The project description

*T*he Netherlands Initiative for Capacity Development in Higher Education (NICHE) has funded a project at TU-K by the name, "Strengthening the Technical University of Kenya to enhance delivery of quality education programmes in Integrated Water Resources Management," to the tune of **Euros 1 million**.

NICHE is a Netherlands funded development co-operation programme with a view of strengthening organizational capacity in developing countries in terms of providing post-secondary education and training. The Netherlands bilateral co-operation programme, supports various programmes in cross-cutting themes (i.e gender equity and linkage of capacity development activities to demands in the labour market and in the higher education sector). Through this project, the expertise of Dutch organizations combined with local or regional expertise, are to assist Southern organizations in capacity development.

The development of this project was initiated and spearheaded by Prof. Paul M. Shiundu who is presently the Project's Team Leader. The development of the grant-winning project proposal was a team effort, whose membership included; Prof. Suki Mwendwa Deputy Vice Chancellor – Technology, Innovation and Partnerships (TIP) Prof. George Thumbi, Mr. Al-

phonse Z. Ondiwa, Ms. Jane Masese, Mr. Ronald Sungu, Mr. Nathan M. Muli, Mrs. Gladys Kitui, Ms. Lydia Gachahi, and Mr. Jackson Mbatoto.

The theme of Integrated Water Resources Management was selected because it is both supportive to economic development and a growing market for entrepreneurial technicians/technologists; particularly in this new political dispensation of county governments.

Kenya is a water-scarce country, and yet future projections show that per capita available water, currently at 650 m³ per year, will likely drop to 359 m³ per year by 2020 as a result of population growth. Consequently, urgent action is needed to increase the capacity of the water sector to improve the availability and accessibility of clean, safe drinking water. So far, access to safe water and sanitation services has not caught up with the needs of the growing population. This project will therefore play an instrumental role in solving some or all of the above mentioned shortcomings by strengthening the capacity of TU-K in the provision of relevant post-secondary education and training in Integrated Water Resources Management. This project aims at producing graduates, who can contribute effectively to the water scarcity problems in Kenya and use the skills and expertise acquired during the training in Integrated Water Resources Management (IWRM) programmes to produce safe and clean drinking water. To achieve this, practical, entrepreneurial and gender skills have to be integrated in TU-K's educational programmes at all levels (certificate, diploma, degree, and post graduate studies).

The project seeks to address the core functions of the University by strengthening its organizational, technical and training capacity in line with the themes of the Vision 2030. The project focuses, on among other things, the following specific objectives:

- Reviewing and developing gender sensitive and practical programmes in Integrated Water Resources Management at certificate, diploma, bachelors and masters levels;
- Improving entrepreneurial and life skills to meet labour market needs;
- Strengthening outreach, partnerships and research programmes to improve the quality of training programmes

and increase TUK's influence on the IWRM agenda in Kenya.

Milestones gained from the nuffic-niche programme over the last six months

Training:

Human resource development is one of the anchors of Kenya Vision 2030 with the aim of creating a "globally competitive and adaptive human resource base among other things, lifelong training and education. Therefore, to realize this, the Technical University of is positioning itself strategically to offer programmes in IWRM. The training programmes are expected to enhance knowledge in IWRM, pedagogical capacity and practical skills for teaching staff that allows them to deliver new IWRM curriculum, effectively supervise students and apply the latest IWRM technology. In this regard the following activities are on-going:

i. After a rigorous and competitive selection process, three Ph.D. candidates were identified (two female and one male) to join University of the Western Cape (UWC), South Africa for doctoral studies, namely;

- Mr. Ronald Sungu - Lecturer, Department of Civil & Environmental Engineering
- Ms. Lydia Gachahi - Lecturer, Department of Earth, Environmental Science & Technology
- Ms. Margaret Ndungo - Lecturer, Department of Civil & Environmental Engineering

The selection process paid special attention to gender which is one of the areas of focus under the NICHE programme and a link between capacity development and the needs of the labour market.

ii. TU-K is in the process of identifying candidates for a fully sponsored Master's degree programme in the field of **Integrated** Water Resources Management. The recruitment process for Graduate Assistants with a bias in Chemical, Biological or Environmental Sciences or Civil Engineering is on-going.

1. Workshops on Curricula Development and Pedagogical skills, Gender Mainstreaming Leadership Planning:

Several workshops and working groups have been held in the last six months in

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TU-K INTENSIFIES RESEARCH THROUGH COLLABORATION

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order to realize the above stated objectives of the NICHE programme.

i. January 16th – 18th, 2013: “Workshop on Curricula Development, Pedagogical Skills and the IWRM Centre” with the aim of strengthening TU-K to enhance delivery of quality education programmes in Integrated Water Resources Management (IWRM). The participants were drawn from the departments of Geospatial Science and Engineering, Chemical Science and Technology, Biological Science and Technology and Civil and Environmental Engineering.

So far, draft curricula for Certificates, Diploma, Bachelors and Masters Programmes in the Integrated Water Resource Management (IWRM) have been developed. The programmes are being developed in consultation with the IHE Team.

The TUK Management was tasked to consider establishment of an IWRM Center (virtual or physical) to fulfil different functions e.g. conducting and acquiring of multidisciplinary/interdisciplinary applied research projects that address real-life problems/challenges; conducting

research on multi-faceted complex water problems/challenges and which will streamline and coordinate all existing and new water training programmes. This is an ongoing process.

ii. February 14th – 15th, 2013: Workshop for TU-K Gender Committee on Concepts of Gender and Gender Mainstreaming: The objective of training the members on gender was to equip members with practical skills for developing the gender policy.

iii. June 3rd – 7th, 2013: Workshop for Capacity Building for TU-K Staff was held under the NUFFIC-NICHE Project Output 1.4 Activity. This was a tailor-made training course on Planning and Leadership for about twenty six (26) senior staff. The training was delivered by consultants from MDF-ESA Training and Consultancy Limited in collaboration with Mott MacDonald under the NUFFIC Capacity Building Programme.

The course was to build capacities of executive management, teaching and other senior staff in better planning, supervising and management of change process of the TUK programmes during the transition into a fully fledged Technical University.

iv. July 17th -19th, 2013: The University Gender Committee held a working session to equip members of committee

with skills and operational guidelines on how to develop a gender policy. In order to mainstream gender it was important to look at gender holistically and institution –wide.

The objectives of the session were: to develop a gender audit/assessment; an inception report; operational guidelines; and a draft gender policy. The session covered areas such as mainstreaming a gender perspective in Science, Technology and Innovation (STI) Policy; making STI policy gender responsive; basic features of a gender policy and gender mainstreaming in STI policy.

2. Purchase of equipments

In order to improve quality of learning and have a competitive advantage over other players in the market; the project plan is to upgrade teaching and research equipment with a focus on IWRM.

In conclusion, this project opens up new horizons to further increase the effectiveness of our cooperation in education and research, especially in the IWRM and the training provided by the project under TUK is practical, useful and is most needed both nationally and internationally TN

SCIENCE STUDENTS LAUNCH ASSOCIATION

Recently, the students from the Faculty of Applied Sciences and Technology launched the Science and Technology Students Association (STSA). The event was graced by the Head of School of Pure and Applied Science (SPAS) Prof. Paul Baki, the association Patron Dr. Vitalis Wekesa and lecturers from the School.

STSA aims at facilitating scientific research on Science and Technology, organizing seminars and conferences for its members and facilitating trips to industries and possible areas of the field of study. The association was formed in February 2012 and registered under the office of the Dean of Students, it commenced business in November 2012.

The research division under STSA is charged with monitoring, organizing, acquiring, managing all ideas, projects and research undertaken by the association. It is headed by the coordinator Fred Owino and his assistant Victoria Mwaeni.

The directorate works in conjunction with students and academic staff, research institutions and any other partner outside the university. Some of the projects undertaken and are at advanced stages

include; yoghurt production, mushroom production, anti-alcohol solution, waste water treatment and management.

Yoghurt production

The project is led by Julius Olumeh and Ivyne Kubai. It was the first project that the group settled on because of its commercial value and therefore beneficial to a young association. The project is complete and the products are ready. The association wishes to involve the administration in identifying and setting up an area for the commencement of production, and perhaps start selling the product to students by early next year.

Mushroom production

This project is viewed as one of the major projects of the club in terms of learning, resource provision and revenue achievement. The STSA community has sought professional advice from Dr. Wekesa of the Department of Biological Sciences and Technology and Dr. Betty Mbatia of the Department of Biochemistry and Biotechnology. It has made efforts to

collaborate with the Kenya Industrial Research and Development Institute (KIRDI) and Jomo Kenyatta University of Agriculture and Technology (JKUAT) institutions well known for production of mushrooms. The commencement of the project needs construction of a mud house or an empty room that can be converted to a dark room.

Anti-alcohol solution

The project aims at reducing the alcohol content in the body by replacing the lost elements and also reducing hangover. It is still at hypothetical stage.

Waste water treatment and management

The background of this research is to eliminate water wastage in research and learning institutions, companies, industries, among others. This therefore means converting used water into use. The project led by James Thiong'o and Fred Owino, is underway. The group has made a trip to Sasumwa water treatment plant to gather more information on the subject TN

TU-K RECEIVES FACILITY FOR SPACE RESEARCH



Prof. Paul Baki performs Zero Gravity experiment using the equipment donated by the United Nations Office for Outer Space Affairs (UNOOSA), for the programme Human Space Technology Initiative, conducted in the Department of Technical and Applied Physics at TU-K

The United Nations Office for Outer Space Affairs (UNOOSA) through its programme, “The Human Space Technology Initiative (HSTI)” has donated applied space research facility to the Technical University of Kenya. The donation follows a successful project proposal spearheaded by Prof. Paul Baki, (Head of School of Pure and Applied Sciences and also a member of the UNOOSA’s Expert Group C (Space Weather): Long Term Sustainability of Outer Space Activities), where he helped in drafting *Guidelines and Best Practices for Space Actors* for consideration by the UN General Assembly. Prof. Baki is an African Union consultant on Space Policy and Strategy, and a Marquis Who is Who amongst Executives and Professionals in the World (2013).

The activities of the HSTI are based upon three pillars:

(1) International Cooperation: To promote international cooperation in human

spaceflight and activities related to space exploration

(2) Outreach: To promote increased awareness among Member States on the benefits of utilizing human space technology and its applications

(3) Capacity-building: To build capacity in microgravity science education and research.

TU-K has received Zero Gravity facility called the Clinostat to undertake terrestrial interdisciplinary research initially involving the Department of Technical and Applied Physics and the Department of Biological Science and Technology- where senior Lecturer Dr. Vijay Adolkar will be a researcher in the project.

Gravity dominates everything on Earth, from the Evolution to the End State of the Universe and also the way life has developed to the way materials interact. Under zero (or microgravity) conditions, one experiences weightlessness like astronauts

who “float” in space, and scientists can conduct experiments that are all but impossible to perform on Earth. Under these conditions even plants can grow with the roots pointing “upwards” and branches “downwards” and with superior genetic modification never seen before!

The microgravity science strives to increase understanding of the effects of gravity on Biological, Chemical and Physical systems and is aimed at creating new commercial products, applications and processes for the industry. The science discipline includes Biotechnology, Fluid Physics, Materials Science, Combustion Science and Fundamental Physics.

TU-K focus will be on a comparative study on the growth behaviour of medicinal plants under normal farm conditions and under microgravity conditions. The objective is to find out whether or not the medicinal and nutritional values of these plants get superior or deteriorate under microgravity conditions with a view to extracting new knowledge that could be utilized in the local industries. This research work is expected to strengthen our hands-on-training capability from the perspective of inter-disciplinary work and is expected to draw a lot of interest from pharmaceutical and food companies. The research will be expanded with time to include many other multi-disciplinary research.

This year the Technical University of Kenya working in partnership with the Scientific Committee of the Solar Terrestrial Physics (SCSTEP) and the International Space Weather Initiative (ISWI) hosted the first ever Space Science School in Kenya from October 21- November 1, 2013, in Nairobi, Kenya. The School Directors are: Prof. Nat Gopalswamy of NASA and Prof. Paul Baki of TU-K TN



Dr. Vijay Adolkar

Dr Vijay Adolkar holds **Msc** in entomology and **Ph.D** in sericulture from Nagpur University, India. Vijay has over **20 years** of research and development experience in environment related programmes funded by several international donors such as the International Fund for Agricultural Development (IFAD) and UNDP-GEF at **ICIPE**, Nairobi, Kenya and **ICAR**, **UGC** major research project at **CSBR**, Nagpur University, India. During his teaching and scientific career he has played major role in **establishing three academic** research units in sericulture and honey post harvest like: **CIP**, **ICIPE**, Nairobi Kenya, **CSBR**, in Nagpur University India and **CSAIRT** in Ankole Western Institute of Science and Technology, Uganda.

TECHNICAL UNIVERSITY OF KENYA LEADS THE PUSH FOR SPACE SCIENCE AGENDA IN KENYA



TU-K Vice-Chancellor, Prof. Aduol poses for a photograph after officially opening the Space Science workshop

The Workshop Participation

The Space Science school drew participation of 56 people, including 39 participants (from across Africa) and 17 Lecturers drawn from across the globe. The Technical University of Kenya was the local host of this activity and provided financial support in addition to hosting the school website. Other Sponsors included: SCOSTEP, Committee on Space Research (COSPAR), Japanese Society for the Promotion of Science (JSPS), United Nations Office for Outer Space Affairs (UNOOSA), International Centre for Space Weather Science and Education (ICSWSE) and the National Space Research and Development Agency (NASRDA- Nigeria). The Directors of the School were: Prof Nat Gopalswamy of NASA and Prof. Paul Baki of TUK. Other issues addressed by senior officers of the university included; Orientation on Academic Programmes Management, ICT service provision, course record management, examination regulations and certification, general academic policies, application for students' identification cards among others.

The Technical University of Kenya Vice-Chancellor, Prof. Francis Aduol has called upon African universities to engage in research and training in space science. While officially opening the International Space Weather Initiative (ISWI) /Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) Space Science School at the Kenya Institute of Education on October 21, 2013, Prof. Aduol affirmed TU- K's commitment to the promotion of space science and technology.

In his speech, Prof. Aduol observed that international researchers frequently chose Kenya as a base station for their research activities, yet Kenyans continue to show very little interest in space science. He also urged policy makers to sustain efforts to promote space science.

Prof. Paul Baki is currently chairing a committee that has drafted the national Space Policy, Space Policy Bill and Space Strategy (He is also in the African Union committee of experts drafting Space Policy and Space Strategy for the AU). This process, which begun in 1994, when Prof. Aduol chaired a similar committee that prepared a report on Space Science and Technology under the then National Council for Science and Technology, and with the completion of the draft policy and

strategy, the country is expected to enact appropriate legislation that will pave way for the establishment of a Space Agency. Kenya was the first country in Africa to host a rocket launch station and a ground station for telemetry, tracking and control i.e the San Marco Station in Malindi and it was from here that the first X-ray satellite, the Uhuru Satellite was launched on December 12, 1970. This satellite carried the first all-sky survey of X-ray sources in the Universe.

Prof. Aduol, a Professor of Geospatial Engineering, could not hide his tremendous interest in space science, adding that the time is nigh for the integration of space science into other disciplines, especially in engineering. He commended Nigeria for leading the research efforts in space technology and publishing a journal on the same. Prof. Aduol encouraged TU-K's Department of Physics and Space Science, in which Prof. Baki is based to continue leading efforts in developing space technology in this country. He also urged African stakeholders to pull together to make space science the source of Africa's pride

Report by Alex Wamonje



TU-K Engineering students in a practical learning session

TU-K SPEARHEADS IMPLEMENTATION OF THE TVET POLICY

The Technical University of Kenya recently organized a conference to deliberate and strategize on matters that are necessary for the effective implementation of the Policy on Technical and Vocational Education and Training (TVET). The conference whose theme was, 'Exploiting the Synergy of TVET Institutions for Effective Implementation of the TVET Policy and Collective Delivery on Vision 2030,' brought together top academics from TU-K, managers of TVET institutions and government officers responsible for the implementation of policies on technical education.

The conference highlighted the importance of Technical Training Institutes (TTI) and TU-K coming together to interpret the role of technical education. TU-K and the

Technical University of Mombasa (TUM) sit at the apex of TVET and the two institutions have been challenged to provide leadership to the TTI's.

In her opening remark, the Principal Secretary for Science and Technology, Prof. Collette Suda, noted that the conference created good synergy on the promotion of TVET hence making it truly unique in the country's history.

"The conference aims at consolidating efforts of key players in TVET for the purpose of comprehensive realization of the goals of TVET and vision 2030, which is certainly strategic for the implementation of government policy," he said.

Prof. Suda reiterated the importance the Government places on skills up-grading for trainers in TVET institutions. She

The University proposes that students with Diploma from TTI will be considered for admission to the Bachelor of Technology (B.Tech) programmes through the Kenya Universities and Colleges Central Placement Service

added that the trainers are expected to be proficient and confident in their areas of specialization.

The PS disclosed that it is no longer acceptable to have teachers handling courses at or above their levels of training. A collective effort will therefore urgently be needed to address the challenge. "This

Continued on Page 14 >>

TU-K SPEARHEADS IMPLEMENTATION OF THE TVET POLICY

>> *Continued from Page 13*

requires each institution to put into place a staff development program and make budget provision for the same. The ministry will also take this requirement into account in allocating operational grants to institutions,” said she.

Prof. Suda challenged institutions to fast-track the processes of reviewing the curricula for Artisan, Craftsmanship and Diploma level courses to make them competency based and modularized in compliance with the current policy.

While addressing participants on the topic, the Vice-Chancellor Prof. Francis Aduol, noted that it was important that a dialogue had been initiated on the state of TVET education in the country. He went further to explain the significance of the conference to both TU-K and the Technical Training Institutes (TTI) in the training of manpower towards the attainment of

Vision 2030. Prof. Aduol explained that the feedback received from earlier visits to various technical education centres around the country formed the basis of the conference. TU-K in collaboration with TTIs has a strong place in the training of technologists.

The university proposed that students with Diploma from TTI will be considered for admission to the Bachelor of Technology (B.Tech) programmes through the Kenya Universities and Colleges Central Placement Service (KUCCPS) the successor to Joint Admissions Board (JAB). TU-K is looking forward to admitting 1,440 students per year from the TTIs on government sponsorship.

The Director of Technical Education Mr. Owate Wambayi, pointed out that in aligning TVET to the requirements of the constitution, there was a need to provide training to a large number of young people who graduate annually from second-

ary and primary schools. He added that it was important to identify and harmonize education and training systems through offering competency based modular training courses.

Other topics addressed included; Partnering in training, by Mr. Edward Tarno, Chairman, Kenya Association of Technical Training Institutions (KATTI). Prof. Wilson Ogolla, Hon. Secretary Engineering Technologists and Technicians (ETT) and Director Industry and Professional Partnerships (IPP), TU-K, addressed the topic, “Professional Registration for Technicians and Technologists.

TU-K Director of Technical Vocational Education and Training Mr. CT Akumu Owuor, explained that the conference was a forum to consult, discuss and generate solutions to issues raised by various stake holders invited **TN**

OUR RESEARCH IS FOCUSED ON INNOVATION AND ENTERPRISE DEVELOPMENT

Research at all levels leads to gaining knowledge about new and existing systems, products and processes. Results-oriented research leads to improvement of quality of life in the society. All members of the university community are encouraged to undertake research, to think outside the box, and to produce results that can lead to innovations, new products development and new business development. Innovation is the centre piece of economic growth and development. To further facilitate and encourage staff to undertake research, drafting of the TU-K Research policy is positioned to generate high research output and staff development.

Some of the current research grants that are being administered by the university staff are:

a. “Study of the Application of Satellite Remote sensing to Support Water resources Management and Disaster Mitigation in Kenya” by Dr. Mohammed Abdullahi Hassan and others.

b. “Production of Supplements from Wild Food Plants for Alleviating Malnutrition in Children under 5 Years at Ithanga Division, Kenya” by Dr. Mercy Mwaniki and others.

The University has also initiated collaboration arrangements with the Kenya

Literature Bureau to create avenues to access research material, and to facilitate publication of scholarly work by staff and students.

Innovation and Enterprise

The university, through the Innovations Committee coordinated the first TU-K Innovations Competition Olympiad. This Olympiad was open to both staff and students of the University. The first presentation of innovations was held on 4th April, 2013, and attracted twelve innovators. Participants had the opportunity of getting expert advice on improvements they could make to their innovations, and will also get the chance of further support through business incubation. During incubation, innovators will benefit from consulting on business issues including product aesthetics, marketing and financial management. Incubation will lead to commercialization of innovations. To safeguard these innovations and any other future innovations, the University registers the innovations with Kenya Industrial Property Institute.

In order to encourage staff and students to come up with more innovations, the Division is coordinating the drafting of the Innovation and Intellectual Property Policy to encourage staff and students to

disclose their innovations as this will be mutually beneficial to the innovator, the university and the country. Development of the Innovation and Intellectual Property Policy is included in the University’s Strategic Plan 2010-2015, Objectives 11 and 12. The Policy will outline the financial benefits that will be enjoyed by the innovators, their academic departments and University, and will also outline the rights to use of University resources and protection of their innovations. Innovations lead to new products and enterprise development. A recent example of this is the development of biodiesel from used vegetable oil. This innovation has been tried, tested and proven to be viable and sustainable.

Commercialization of innovations should lead to enterprise development; these include the sale of products, services, patents, etc. It is important to note that entrepreneurial training and participation in the creation of enterprises, enhances the employability of the University’s graduates, especially as this specific training also encourages collaboration with industries and external research institutes. Drafting of the TU-K Enterprise Development Policy is ongoing, and will complement the Innovation and Intellectual Property Policy **TN**

MAKING SENSE OF “KNOWLEDGE-BASED ECONOMY”

A Prerequisite for Making Kenya a Globally Competitive Innovation Hub



By Joshua Nyamweno Onchong'a

A knowledge based economy primarily relies on the use of ideas rather than physical abilities and on the application technology rather than the transformation of raw materials or exploitation of cheap labor. In such an economy product cycles are shorter and the need for innovation is greater. Recent studies by most researchers have come to advocate for a knowledge based structure of an economy and give credence to innovations

Knowledge is a tool that carries transformative effects that have been proven to carry economic qualities. If best handled and applied in the frame of economic productivity, a nation is guaranteed to attain economic freedom. The need of knowledge creation, transfer and application are areas that portray the nature of knowledge. These represent research innovation and education; pillars of any innovation system. All these factors constitute intangible assets to any nation that owns them.

In a bid to build a knowledge based economy most researchers have emphasized on structures of building innovation systems, multidisciplinary research, lifelong learning among the many things expected to be in a knowledge based economic structure. However before soaring to those levels do we know what knowledge is?

Someone could define knowledge as familiarity with someone or something, which can include facts, information, descriptions, or skills acquired through experience or education. Knowledge can

be classified into implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic.

This therefore implies that as far as knowledge is concerned we are not limited to what we acquire in class. It is broader to encompass skills and expertise acquired out of class.

To be relevant in this era of knowledge based economies we need to be versed with knowledge technologies; knowledge management and knowledge engineering.

What I criticize about the education system in Kenya is that we are largely knowledge users than knowledge creators. This makes us to be irrelevant in competing in the global knowledge economic platform.

For instance engineering in our universities is defined as the application of scientific, economic, social, and practical knowledge in order to design, build, and maintain structures, machines, devices, systems, materials and processes. However in the practical sense in our aeronautical (dealing with airplanes that fly in the earth’s atmosphere) and mechanical engineering firms just to give them as examples we do not design aeronautical or mechanical systems. Largely we do repairs and maintenance of systems bought from elsewhere.

I don’t know whether we think our institutions provide inferior training to our engineers but I have not seen our civil engineering companies being given major construction projects. This shows that we are not only shy to compete in the global knowledge economy platform but also ready to sell our employment opportunities and still complain of unemployment.

It is also worthy noticing that we have not learnt to mentor our innovators well. It is good to be proud of the recent innovations in Kenya especially in mobile banking, IT among many other fields. However we have not come close to building silicon savanna innovation hub a replica of the famous Silicon Valley. For instance we have had a number of young people in Kenya who have made efforts to fly but their dreams curtailed by the stringent aviation laws in Kenya. In fact I promote the rule of law but it is high time that our frontiers looked for ways of elevating the young innovators rather than “cutting their legs”.

We also need to consider knowledge

creation through research in our universities. Largely our research projects in Kenya are limited to qualitative research and review of empirical literatures and more often as a curriculum requirement in masters and doctoral studies. We need to change this and make research a passion and very competitive in undergraduate studies as well.

Research can be done to boost traditional practices and modernize them to create knowledge. For instance we have many traditional practices that could provide a basis for modern medical research and practice. When I last had a holiday these are some of the important things I learnt.

I came across a traditional doctor who treats all sorts of fracture. In a couple of weeks that I visited her clinic, patients with fractures were healed with a special art of aligning the fractured bones using her hands and a procedural massage. In fact it worked faster (in fact a few weeks rather than months in conventional plastering) and more effective than the plastering in modern hospitals which in some cases the bones join in misaligned positions causing further complication. This could give a new definition to orthopaedics if this practice is contextualized.

The Gusii trepanation practice (an ancient form of brain surgery) which was used to relieve strong and persistent headaches after a blow to the head, such as those inflicted during war, is another example. Elsewhere it has been proven to cure diseases such as epilepsy, some forms of blindness, vertigo, deafness, and mental disorders. Other than documenting these practices it is high time it gave neurology a new lease of life in Kenya. In fact there are many cases of such implicit traditional knowledge that can better even our engineering practice in Kenya.

Therefore for the stake holders in our academia and policy makers, it is high time we reviewed our intellectual property considerations and protect our innovators as well as contextualize research in our universities for knowledge creation to make Kenya a key player of the global knowledge economies **TN**

Onchong'a is a second year Bachelor of Aeronautical Engineering student.



The Smithsonian Jazz Band performing to TU-K Management during the former's tour of the institution

These are what the music students had to say:

Edmond Obillah, (Saxophonist), 2nd year student, Bachelor of Music

I played Piano and Saxophone. I learnt how to compose on stage and together with Smithsonian Jazz and my fellow students, we performed a song I had arranged called 'Malaika'. About the Saxophone, I learnt about scales and how to articulate same note with different pitches.

Dennis Macharia Maina, (drummer), 2nd Year, Diploma in Music

We started with rudiments and built from there. I learnt a lot for instance the history of jazz drumming, comparing some styles from traditional to modern jazz. Other important techniques I learnt was on drum patterns' application, swing beat in jazz and improvising while drumming.

Joyce Ruto, (Vocalist), 2nd Year, Bachelor of Music

I sing as well as play piano. My interaction with the visitors was a great experience. I learnt various methods of controlling breath while singing as well as approaching different genres of music. I was encouraged to learn that the things one fears most, are what he/she should try to do.

Charles Otieno Okello, (Vocalist), 2nd Year Diploma in Music

We learnt a lot in voice techniques and limitations which is essential in the science of singing. Another interesting topic was on different dynamics of jazz genre. We found out that each musician is unique in his/her own rights. Musicians are friendly people, we could interact with them freely I guess because we share the same language. We thank the university, our Executive Dean Prof. Emily Akuno and our lecturers for organising such a visit. We will appreciate if we continue to interact with more professionals.

TU-K HOSTS A LEADING JAZZ BAND

The Technical University of Kenya is working on establishing links with the cultural department of the American Embassy in Nairobi, in a bid to strengthen and promote music through learning and interaction with specialists and cultural performances in the university.

Recently this engagement saw an octet from the Smithsonian Jazz Masterworks Orchestra from The Smithsonian Museum, Washington, D.C. in the USA visit the university on November 4th 2013, on invitation by the US Embassy. The musicians conducted a lecture-demonstration for students pursuing music, which focused on the historical development of Jazz as a genre of music. This was followed by a workshop where students were coached on techniques for their individual instruments and the jazz style, leading to a joint performance between the octet and the students.

The team, composed of a pianist, drummer, trombonist, alto and tenor saxophonists, trumpeter, acoustic bass player and vocalist, expressed admiration for the students' efforts, noting that an American classical form had found space in a Kenyan classroom. The students' rendition of their prepared jazz standard, *Don't get round much anymore* and Fadhili William's *Malaika* were enriched when the visitors joined in, with improvisation from the various lead instruments, and a very noticeable rhythm section supplied by the bass, piano and percussion.

The visitors ended their TU-K tour with a concert for the Management, where they were hosted by the Vice Chancellor, Prof. Francis Aduol. In his remarks, the Vice-Chancellor welcomed the group saying their presence in the institution marked a very important step in the teaching of music. He noted that music is viewed as a rare program in other institu-

tions of higher learning, but TU-K treasures it. "We are determined to take this a notch higher," he said and continued, "we appreciate your coming, it will help strengthen the teaching of music and development of programs as envisaged in the curriculum." The VC added that the university was keen on involving students and staff in music concerts as well as exploring other avenues that will persuade students to pursue music as a career.

The Smithsonian Jazz ensemble was accompanied to TU-K on the first stop of their one-week nationwide tour by Mr. Ken Wakia, the Culture Consultant at the US Embassy, who is a prolific musician in his own rights, and the Cultural Attaché, Mr. Raymond Stephens, who had earlier worked at the Smithsonian Institute. The latter explained that the band has distinguished itself as a leading resource for jazz research, collection and preservation initiatives, exhibitions, performances

FROM THE US

and education programs. It boasts of over 30 years experience in music leadership and has performed for audiences at the Smithsonian Institute and the Kennedy Center, at the White House and the U.S Capitol among other places world over. The Department of Music and Performing Arts is grateful to both the TU-K management and the Culture department at the US Embassy for making this engagement possible.

VISITS BY MUSIC SCHOLARS

In an earlier event, from 9th – 10th September, three scholars from the University of Georgia, US, Prof. Stephanie Tingle, Prof. Martha Thomas and Prof. Jean Kidula held a master class with our students, followed by a concert held at Michael Joseph Centre and sponsored by Safaricom dubbed *Made in America*. The scholars interacted with High School students who

are now sitting their national examinations, and university students who learnt tips on playing piano and performing their own songs.

On 14th and 15th October, Dr. Mary Kennedy from the University of Victoria in Canada facilitated a workshop on Music Research and Publication which was attended by students and staff from TU-K, Maseno and Kenyatta universities. This enabled the department to fulfil one of its roles as facilitator of music research and scholarship in the nation.

According to Executive Dean Faculty of Liberal and Professional Studies (FLPS) Prof. Emily Akuno, these are efforts by the university to set high standards in music, give the students exposure to the real world and mould them into professionals. She adds that students pursuing a career in music are professionally trained and therefore need to focus on hardwork and diligence in order to succeed TN

THE SKY IS THE LOWER LIMIT,



“You must love what you do and do it passionately.” These are the words of our alumni who shared their story with the TUNews recently. Their journey to success has not been easy and that more than often have encountered obstacles in their fields. They say hard work, resilience, passion and determination are the driving forces in their careers. **Cyprian Orina-Nyamwamu** is a leading Governance, Gender, Development and Policy Expert in Africa working as the Executive Director of the East Africa Democracy Foundation. He is also a Panafrican Expert and Consultant in security policy, human rights, leadership, democracy and development projects management.

CYPRIAN ORINA-NYAMWAMU: My life at Kenya Poly

I joined Kenya Poly in January 1995 leaving in November 1997 having attained a Diploma in Accountancy and Management from the then Department of Business Studies. During my first year, I was elected the class representative to the Representative Council (RCC).

I was elected Chairman of RCC during my second year in 1996 up to my time of completion.

During that period, I spearheaded reforms to the Student Union KPSU to focus on effective student representation but also Putting Kenya Polytechnic on the national map as an institution involved in national democratization and development processes.

I strengthened the National Polytechnics Students Union and pioneered the formation of Kenya National Students Union (KENASU) which was first hosted in our institution under my chairmanship. We focused on the academic and technical training performance of all the eleven

departments at that time, fighting for better remuneration of lecturers and workers and securing students rights to quality education and accommodation in our hostels.

We developed a very strong cooperation between the student body and the administration and united the students to uphold discipline. My future plans are to undertake projects to create employment for the youth of Kenya and support gender equality in all the 47 counties through a company we formed in December 2012- County Transformation Services (CTS) where I am director and having strategic partnership with Kenyans in the Diaspora.

Ultimately I will offer East Africa strategic leadership as the President of the Republic of Kenya with the aim of giving Kenyans and East Africans a NEW DEAL in global development

Advice to the students of TU-K

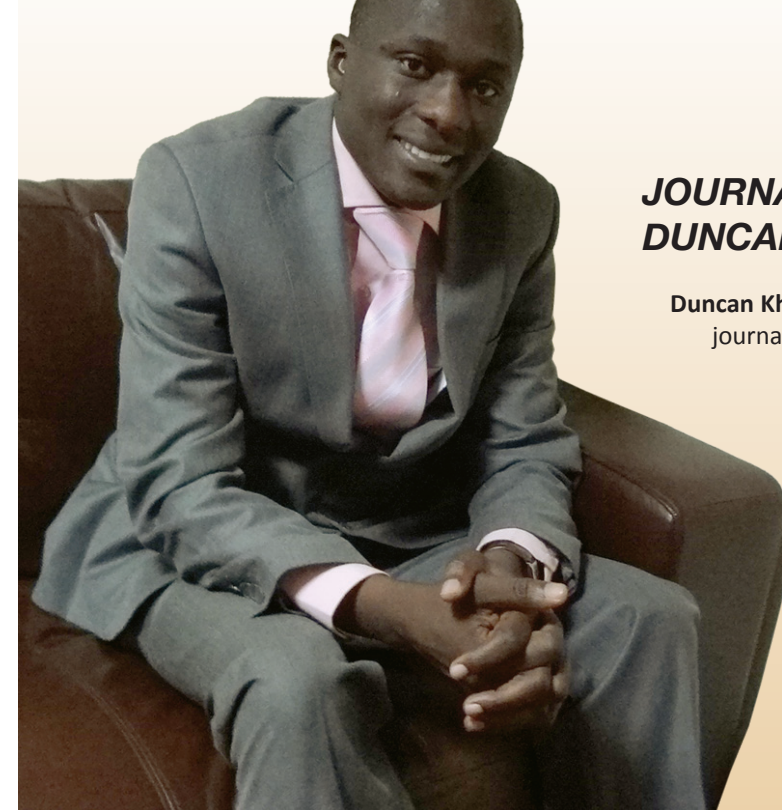
Liberate yourself first, then your family, then the organization/firm you shall work

for, then Kenya will be liberated. The secret to liberating yourself is to be ethical no matter what. I was the chairman of the RCC bursary fund for poor students but I refused to pay my college fees from that kitty even though I was able to do so and I was a very needy case. I used to be kicked out of class as the Chair of RCC and the HOD, the Late Mr. Oloo would get very worked up but I never once fell to the temptation.

So two things for students- be ethical and secondly- postpone gratification if you want to make it in life.

Unfortunately most TU-K and other public institutions' students need guidance but they never get it in college, so most end up with difficult after-college-lives. Daystar and Strathmore for example have very strong student centered management. It is time we invested in mentoring and coaching students to become effective and transformative leaders.

OUR ALUMNI AFFIRM



JOURNALISM IS PASSION – DUNCAN KHAEMBA

Duncan Khaemba, a young, energetic and renowned journalist. You have probably watched him on TV during major public events doing what he loves most, reporting. Khaemba's star is rising very fast. He is remembered for having covered major events like Kenya Defence Forces incursion in the 'Operation Linda Nchi,' general elections in Somalia among others. Today, he is living his dream and has no regrets. Here is his story:

When did you think of becoming a journalist?

Journalism has been my childhood dream. I have passion for news and current affairs, storytelling comes to me naturally. In High School, I belonged to a journalism club, 'the weekly informer.' If I was not a journalist, I would probably be a lawyer.

Talk about your education and training?

I joined the then Kenya Polytechnic where I graduated with a Diploma in Journalism and Public Relations (PR) in the year 2005. I have also studied at the University of Nairobi and Radio Netherlands where I trained in Broadcast Journalism and Governance. I attribute my success to the training I acquired. I had very supportive and inspiring lecturers.

What was your experience as a first time TV reporter?

Of course one is nervous going on air for the first time. I have had a mileage of experiences, during my attachment at Kenya Broadcasting Corporation (KBC), there was a shootout in Eastleigh which I was assigned to cover. My bosses were impressed with the story. I was also assigned to cover a fire inferno at Nakumatt City Cabanas. When the Kihongo Building along Road Ngala Street collapsed in 2006, I was the first journalist to break the news, later in the night, Citizen TV did Outside Broadcasting (OB). I was assigned to do live reporting, that marked a step forward in my career.

What does it entail to become a good journalist?

Hard work, passion, resilience and creativity are key factors. Journalism is a field of reality, each day presents new intrigues and experiences ranging from triumphs, tragedies etc. A journalist has to learn to deal with all these. He/she should develop nose for news, keep his ears on the ground all the time. He should also be able to operate a video camera, still camera, voice recorders and other equipments necessary for his job.

What has been your hardest assignment in your career?

Covering the war zone Somalia during the Kenya Defence Forces incursion in the 'Operation Linda Nchi.' It was a life time experience we spent nights in deep seas, we watched our soldiers battle out and the enemies firing back, lives lost, it was scaring.

Covering elections in Somalia was also another risky affair. For the first time I heard bullets being fired in a single minute, grenade attacks and anything you can imagine of and remember we were doing live coverage.

What kind of stories to you like covering or telling?

I'm an all round person, I like covering political intrigues, writing feature stories, documentaries among others.

What do you do during your free time?

This is a service industry that denies you time, you have to leave your phone on, just in case you are called for assignment at any time. All the same I'm an ardent soccer fan and also love music from different genres.

Do you have role models, who are they?

To me, Emmanuel Juma makes journalism interesting, I like his comical way of telling stories, filled with humour and satire. Linus Kaikai has the spirit of a moran, he has courage to ask questions no other journalist would dare ask. Joe Ageyo, Catherine Wambua, Farida Karoney are superb and have their unique ways of telling stories.

What are your future plans?

To study Communication Sociology and Political Science. I would also love to be a motivational speaker.

Briefly talk about your back ground

I was born in Chereng'any in TransNzoia County. I joined Makutano Primary and St. Francis High School Suwerwa. Friends later on introduced me to the then Kenya Polytechnic.

What would be your advice to young people who wish to venture into journalism?

In life, you must have passion, set dreams and work hard towards realizing them. Time is essential and irreversible. Use it wisely

TRANSPORT ENGINEERING

HAS GREAT PROSPECTS



Construction works at the Jomo Kenyatta International Airport Terminal 4



A section of the Thika Superhighway project, the Museum Hill Interchange to enhance transport connectivity

By William O. Ondiro

The Department of Aeronautical and Aviation in the School of Engineering Science and Technology at TU-K is training Airline Engineering Programme, designed to equip the trainees with knowledge and skills necessary for the technical personnel at all levels.

The course programmes are designed such that they are industry compliant and therefore enable trainees obtain adequate exposure to the activities in the airline by the end of the training. This kind of education targets a particular kind of engineer in two ways:

1. It emphasizes on the maintenance and operation of equipment rather than the design and production of it.
2. It deals with flying vehicles with critical requirement for safe operation.

Therefore the two features greatly influence the ideal training for such an engineer.

The maintenance of equipment in operation is a matter which has not attracted a great deal of attention as a possible subject for advanced education. It seems to have been taken for granted that this activity does not require a high academic credentials and could be picked up at the skilled mechanic level without difficulty. As applied science and advanced design lead to more complex vehicles and machines in all fields of engineering and technology, it is expected that the running

of our industry at a satisfactory level of economy and efficiency will require complementary application of science on the maintenance and operation side.

A sharper emphasis adds to this task in that modern aircraft is both technically advanced and designed to operate near its limit in order to achieve maximum performance from a given weight. The operating environment is also variable and complex. This leads to aircraft systems complexity and great possibilities for manufacturing.

Maintenance and operation of the equipment has, therefore, to pay close attention to performance relative to specifications and has to avoid the type of failure which might have serious consequences. At the same time, there is very little margin in the economies of operation which would allow for an over-generous attitude to factors of safety or ignorance.

Productivity

There is a substantial opportunity for improving productivity by more highly developed practices and techniques in this field of engineering. Airline maintenance engineering is, paradoxically, more productive. On reflection, this is not so surprising because it simply expresses the fact that the less the engineering work done in keeping the aeroplane flying safely, the cheaper is the operation. The effect is aggravated because when the aeroplane is grounded for maintenance work it

is not available for commercial use, which is the purpose for which it was purchased.

Time spent on the ground for maintenance, and thus lost to revenue-earning employment, tends to be in excess of time spent flying. The effect of this on operating economy is crucial. For this reason it is important to bring to bear the same order of human talent in the form of appropriately trained engineers as are employed in design and manufacture. The economic-effects that their effort could have are important and the nature of the work calls for the kind of training and mental ability that the graduate engineer can bring.

This type of engineering is different since it is concerned with minimum expenditure of effort and resources in order to produce a given operational result, the principle of least work or perhaps minimum interference, should be formulated.

The Airline Engineering Department

The engineering department of an airline comprises of several main functions two of which are management of aircraft maintenance and the technical support of project and development.

The maintenance section is responsible for the production function that involves turning out serviceable aircraft to a plan meeting the operating needs of the airline. The maintenance engineers are concerned with the correction of troubles arising in operation, either by adjustment,

repair or replacement or with the economics of the process by which the aircraft are kept in good operating condition. They will have a considerable management problem on their hands due to the technical complexities of the task and the geographical dispersion of effort around the route system. They will have to integrate work in the hangers and workshops to return the aircraft to the line on time to a tight programme planned six or so months ahead by the commercial department. This is done with the minimum time of aircraft off service.

Equipment removed from aircraft as unfit for further service will require overhaul, and the maintenance section will expect to operate overhaul shops to deal with such equipment and to do this at cheaper rates than can be bought outside from specialist firms, also to produce greater reliability in the overhauled part.

The project and development section will be concerned with the technical development of the aircraft and its equipment to give better service and improved performance in operation and also to handle the specification and procurement of new types of equipment meeting the operating needs of the airline. But even a small airline will usually afford itself some graduate engineering talent which is responsible for encouraging or screening manufacturer's modifications and if necessary, designing modifications to aircraft

and components as deficiencies reveal themselves in operations.

Not only has the technical quality of civil aircraft altered radically, but the changes in the cost of the aircraft and its systems have entirely altered the economics of aircraft maintenance. The expense of the aircraft and its various systems and components is now such that it pays to devote considerable care and study to the planning of maintenance and overhaul, both aircraft and equipment, which previously could be treated in a rather casual fashion. Besides, the size of the organization now represented by a modern airline has introduced problems of management and organizational control which have added new requirements for training and ability of the senior staff. This means that it is not uncommon to find that the experience and training which was satisfactory at the birth of the airline is now showing signs of strain under the new demands.

Airlines all over the world are finding a serious problem in determining the requirements for the training and education of their next generation of management and a further problem in introducing these people at the right position and with the right prospects in the industry.

The graduate engineer

Graduate engineer are people with high diplomas or engineering degrees. In a large airline there is a need for people

with these qualifications on the project and development side to deal with the more intricate technical problems and on the maintenance side deal with the management of a complex organization.

The maintenance section of a small airline, working with established aircraft and with a simple fleet and route pattern, has shown that even with modern equipment like the big jets, it can operate with skilled licensed engineers and very little else. Problem begins to arise as the operation becomes more complex and involves large fleets of aircraft serving a complicated network with many points of call.

In the growth from the small airline not requiring much in the way of system control to the big airline which does, we pass through the difficult sage where the competent licensed engineers are confronted with a new type and scale of problem which their basic training do not equip them adequately to deal with. They either have to learn new skills or perhaps show a negative genius for managing large concerns which will enable them to get by. many engineers in fact do have the ability for managing this transition, but unfortunately the demand outrun the supply and in future there is no doubt that we have to train people for this function in the same way that people are trained for management posts in other kinds of industry which are large enough to create similar problems TN

STRENGTHENING TIES WITH EDINBURGH NAPIER UNIVERSITY



Prof. Aduol welcomes Dr. Neil Austin, the International Partnerships Manager at Edinburgh Napier University, UK, during the latter's recent visit to TU-K

The Technical University of Kenya and Edinburgh Napier University of United Kingdom (UK) will enter into a collaboration agreement that will focus on academic partnerships.

This was revealed recently during a meeting held between TU-K Executive Management Board led by the Vice-Chancellor Prof. Francis Aduol and Dr. Neil Austin, the International Partnership Manager, Edinburgh Napier University. The two universities agreed that the collaboration will focus on programmes both at Diploma and Degree levels.

Dr. Austin indicated that Edinburgh Napier University will facilitate TU-K staff in academic benchmarking as well as help launch E-learning programmes. Other areas the universities are keen on include research in higher education and consultancy among others. This therefore means that there will be sharing of knowledge and skills as well as conducting capacity building for staff and students. Edinburgh Napier University already has partnerships with universities in Scotland, China, Hong Kong, India, Singapore and Malaysia.

While welcoming the move, Prof. Aduol said that the two universities which share several similarities have a lot to gain from the collaboration. He added that the universities will identify initiatives that will contribute to the student development agenda of producing entrepreneurs

and not job seekers.

Among those present during the meeting were; Deputy Vice Chancellor, Academic, Research and Students (ARS) Prof. Paul M. Shiundu and Deputy Vice Chancellor, Technology, Innovation and Partnership Prof. Suki K. K. Mwendwa TN

About Edinburgh Napier University

It is one of the older institutions in UK and for many years, supported by the British Government since the early years of 1960's and 1970's.

In the year 1964, Napier Technical College opened its doors to the public. It was later renamed Napier College of Science and Technology • In 1971, Napier started to offer its first degree courses and later renamed Napier Polytechnic in 1986. It was also permitted to validate and monitor its degree courses • In 1992, the institution officially became Napier University. The University launched its new title, Edinburgh Napier University in 2009.

The University has a student population of about 18,000 both from the United Kingdom and 109 other Countries It has three Faculties; The Business School, Faculty of Engineering, Computing and Creative Industries, Faculty of Health, Life and Social Science. Edinburgh Napier University offers Post Graduate Diploma in Advanced Structural Engineering (Full time and part time) and the Technical University of Kenya offers Diploma programmes in Pharmacy, Medical Laboratory and Engineering among others.

Promoting innovation beneficial to both academia and industry

COLLABORATION BETWEEN TU-K AND KVM TO SEE **REVIVING OF A TRAINING SCHOOL**



KVM Managing Director Mr. David Percival explains a point to TU-K VC Prof. Aduol and DVC – ARS Prof. Paul Shiundu during their tour of the KVM assembly plant

Brief history of the KVM plant

The Kenya Vehicle Manufacturers Ltd was started in the year 1974 by DT Dobie which owned (32.5%) of shares, CMC (32.5%) and the government of Kenya (35%) with its core business being vehicle assembling. At the moment they have a capacity to assemble three-wheelers up to light trucks. Currently, production is low due to low demand arising from the effects of March 4th 2013 Elections.

Between 1977-1981, KVM operated the Training School admitting school leavers to Automotive Engineering Programs and other related programs. It was stopped because most trainees were leaving to seek employment elsewhere therefore not benefiting KVM.

KVM currently assembles 75 different types of Vehicles, 80% of which are from CMC, one of its principal shareholders. It receives Completely Knocked Down (CKD) kits from DT Dobie, CMC and other customers (they are either imported or made locally) and assembled at a cost.

The dream of Technical University of Kenya lecturers attending External Industry Based learning (IBL) program will soon be boosted. This follows recent dialogue on a possible collaboration between the university and the Kenya Vehicle Manufacturers (KVM) Ltd.

TU-K terms of service require that after every three (3) years of service, a member of staff is supposed to touch-base with the industry. The staff will therefore be released to the industry for a period of three (3) months, to get exposed to the emerging industry trends and necessary skills in the discharge of their duties. Therefore KVM is targeted to accommodate some of the staff on this program.

During a meeting held at KVM offices in Thika, the university team led by the Vice Chancellor Prof. Francis Aduol and KVM team led by the Managing Director Mr. David Percival identified other areas of collaborations among them; reviving the KVM training School through the assistance of the university. This could be done through a joint curriculum development, joint delivery and certification of Diploma and Certificate programmes in relevant areas such automotive, mechanical (production) and welding engineering.

The collaboration will also consider Post-graduate Students from TU-K using the industry facilities for their research projects. TU-K students will thus benefit from the Industry Based Learning (IBL) program.

After the meeting, the team was taken through the plant led by Mr. Laban Dundo and Mr. Ezra Mereng starting from the unpacking and unloading zone, to body shop, paint shop, assembly area and testing area. The MD took them through the training facility which consists of one class room and five other spaces that will be converted into classes in future.

Accompanying the VC during the meeting were Prof. Paul M. Shiundu Deputy Vice Chancellor, Academic, Research and Students, Prof. Maina Maringa Ag. Executive Dean, Faculty of Engineering and Built Environment, Prof. Wilson Ogola, Director, Industry and Professional Partnerships and Dr. Eric Ogur, Chairman, Department of Mechanical and Mechatronics Engineering. The KVM team included Mr. Ralph Hruschka, Quality Consultant, Mr. Laban Dundo, Production Manager, Mr. Joseph Otieno Ojino, Consultant, Mr. Ezra K. Mereng, Administration, Mr. Ronald Simiyu ICT and Ms. Violet S. Onyango, Finance TN

HOW ABOUT A TECHNICAL UNIVERSITY IN ISIOLO COUNTY?

The Technical University of Kenya has plans of establishing a technical institution in Isiolo County. This follows a meeting between the university Management led by the Vice-Chancellor (VC) Prof. Francis Aduol and the County Governor Hon. Adhi Godana Doyo who paid a courtesy call to the institution recently. TU-K seeks to take advantage of opportunities set to be created by devolution. This move will boost our intake as the institution gears up to open more centres across the country.

The VC explained that opening up an institution in a marginalized area would be for future prosperity and in the best interest of the country. And there are prospects of the institution becoming a fully fledged university. "We are interested in this project in a different perspective; we think that for this country to move forward, we need to restore vocational training, give young people as much skills as we can," he affirmed adding that the university is expected to offer education and training that will focus on application of technological knowledge and skills.

Being a pillar of the Technical and Vocational Education and Training in the country, TU-K has a responsibility of providing leadership in the advancement of industrialization and economic development. The technical institution will be a replica of the Mandera Technical Training Institute established by TU-K through the support of the then Ministry of Higher Education Science and Technology.

The Governor welcomed the idea saying he was willing and happy to work with TU-K. He admitted that his County lags behind in education and that it was in dire need of establishing educational institu-



The Vice-Chancellor having a chat with the Governor of Isiolo County, Hon. Adhi Godana Doyo when the latter visited TU-K

tions. "My County has no technical Institution and is deeply yearning for education. Our students go as far as Uganda to pursue education in universities and technical institutions," he said.

The Governor said that before his engagement with TU-K, he had discussions with the Government on the possibilities of getting a fully fledged university or upgrading some Schools like Garbatullah High which would make an entry point to getting at least an institution of higher

learning. "We know technology is expensive, TU-K is well versed and better placed for such training. Working with the university gives me a better opportunity to negotiate with the Government," he said.

Hon. Doyo added that TU-K has entered his County at the right time when economic development is taking a new shape and that technology and innovation has been placed at the centre of the new government. He said that his government will set aside 1,000 acre piece of land for building institutions of higher learning.

With investors exploring resources like petroleum, gas and minerals in the County, the Governor remains optimistic that his community will be ready to utilize such opportunities by producing human resource. This will be achieved through training skilled personnel like engineers, technologists and artisans. The National Government has an agenda of establishing a technical institution in every county and therefore once established, the country will draw massive benefits arising from logistical and economical functions of Isiolo and by extension, its strategic location. Isiolo is an entry point to Samburu, Wajir, Laikipia and Tharaka Nithi, among other counties.

Once established, the institution will be admitting students in programmes from Certificates, Diplomas and Degrees and will ensure that graduates qualify with strong practical knowledge.

TU-K lay more emphasis in mining, water engineering, irrigation, space science technology, among others that would be relevant to the region. Prof. Aduol has the passion to drive this agenda and is already in consultation with Ministry of Education

TN

GETTING A HOLD ON MECHATRONICS

... A continuation from previous edition

A blend of mechanics and electronics, mechatronics has come to mean the synergistic use of precision engineering, control theory, computer science, and sensor and actuator technology to design improved products and processes

By Steven Ashley, Associate Editor, © The American Society of Mechanical Engineers

The Roots of Mechatronics was first used in terms of the computer control of electric motors by an engineer at Japan's Yaskawa Electric Co. in the late 1960s. The word has remained popular in Japan, and has been in general use in Europe for many years. Although mechatronics has been slow to gain industrial and academic acceptance as a field of study and practice in Great Britain and the United States, its increasingly prominent place worldwide is shown by the growing number of undergraduate and postgraduate mechatronics courses now being offered. Many engineers would contend that mechatronics grew out of robotics.

Early robotic arms, then unable to coordinate their movements and without sensory feedback, benefited greatly from advances in kinematics, dynamics, controls, sensor technology, and high-level programming. The same battery of modern technologies that made robots more flexible and thus more useful was then brought to bear on the design of new generations of high-performance, adaptable machinery of all kinds. In the 1970s, mechatronics was concerned mostly with servo technology used in products such as automatic door openers, vending machines, and autofocus cameras. Simple in implementation, the approach encompassed the early use of advanced control methods, according to Transactions editors. In the 1980s, as information technology was introduced, engineers began to embed microprocessors in mechanical systems to improve their performance.

Numerically controlled machines and

robots became more compact, while automotive applications such as electronic engine controls and antilock-braking systems became widespread. By the 1990s, communications technology was added to the mix, yielding products that could be connected in large networks. This development made functions such as the remote operation of robotic manipulator arms possible. At the same time, new, smaller—even microscale—sensor and actuator technologies are being used increasingly in new products. Microelectromechanical systems, such as the tiny silicon accelerometers that trigger automotive air bags, are examples of the latter use.

As significant as these developments may seem, a good deal of skepticism remains about the idea of codifying them in an engineering field called mechatronics. "It's certainly a catchy word," said controls expert Ernest O. Doebelin, professor emeritus at Ohio State and an ASME Fellow, "but it's an evolutionary, rather than revolutionary, development. Now that computers are small and relatively cheap, it just makes sense for designers to build them into products.

Mechatronics is really the familiarity with all the other technologies—computers, software, advanced controls, sensors, actuators, and so forth—that make the advanced products possible. However mechatronics is defined, it means "we now have viable technology for computer control of mechanical systems at all levels, from toasters to autos," said David M. Auslander, professor of mechanical engineering at Berkeley. "Today we have mechanical systems for which performance is defined by what's in a computer, whether it's software algorithms, neural networks,

or fuzzy logic.

By applying the mechatronics approach, a large number of motions can be synchronized, even at long distances away from each other." Under external forces, a range of secondary effects such as vibration and noise can adversely affect the functional behavior of machine elements and instruments, according to Van Brussel. Passive damping treatments are available, but they have limited applicability. "The mechatronic approach can provide more effective solutions. Based on the state information about vibration and noise levels, captured by appropriate sensors, the vibrations are counteracted by actuators distributed over the structure.

"Mechatronics does not change the design process," Craig said. "It gives the engineer greater knowledge, so the concepts that are developed are better, and communications with other engineering disciplines is improved.

The result is a highly balanced design." "One thing that is not at all not clear is how all this additional material should be delivered to the student," observed Ed Carryer, consulting associate professor at Stanford University in Palo Alto, Calif. "Most mechanical engineering curricula are already stuffed to the gunnels," he said. "It's either overload the undergrads or make it the focus of a certificate program at the master's level." Few academics expect mechatronics to attain the level of a formally accepted engineering discipline. "Our academic system tends to resist the forming of new disciplines," Auslander said. "For example, controls has been a well-recognized and important discipline since the Second World War" TN

GENDER MAINSTREAMING AT THE

Gender awareness means recognition of roles of men and women in society and how they result in differences in interests, needs, power, status and privileges. With that knowledge, one is able to identify challenges arising from gender inequality and discrimination and act in context and make adjustments to the level of playing field, with the goal of creating equality between men and women. That is what it means to mainstream gender, which is not only a legal requirement but also a Performance Contract requirement for all institutions.

The Technical University of Kenya is committed to mainstreaming gender in the institution. It has therefore established a Gender Committee chaired by Prof. Suki Mwendwa. The Gender Committee was set up in September 2012. The Committee has been working with the NUFFIC Consultant, Ms. Wanjiro Gathira.

The first sensitization workshop for the Committee was held on 13th September 2012. It was a coming-together of people with diverse views of what gender is all about. Members were informed that gender was about harnessing the com-

plementary strengths of both males and females for the good of the whole!

After the workshop, the Consultant gave the Committee a draft Gender Policy to review. Members worked on the various sections of the draft policy, and came up with Draft 2.

A training workshop for the Gender Committee was held at the Methodist Guest House on February 14th and 15th 2013. It was meant to educate members on concepts of gender and gender mainstreaming.

From 17th to 19th July, a Working Ses-

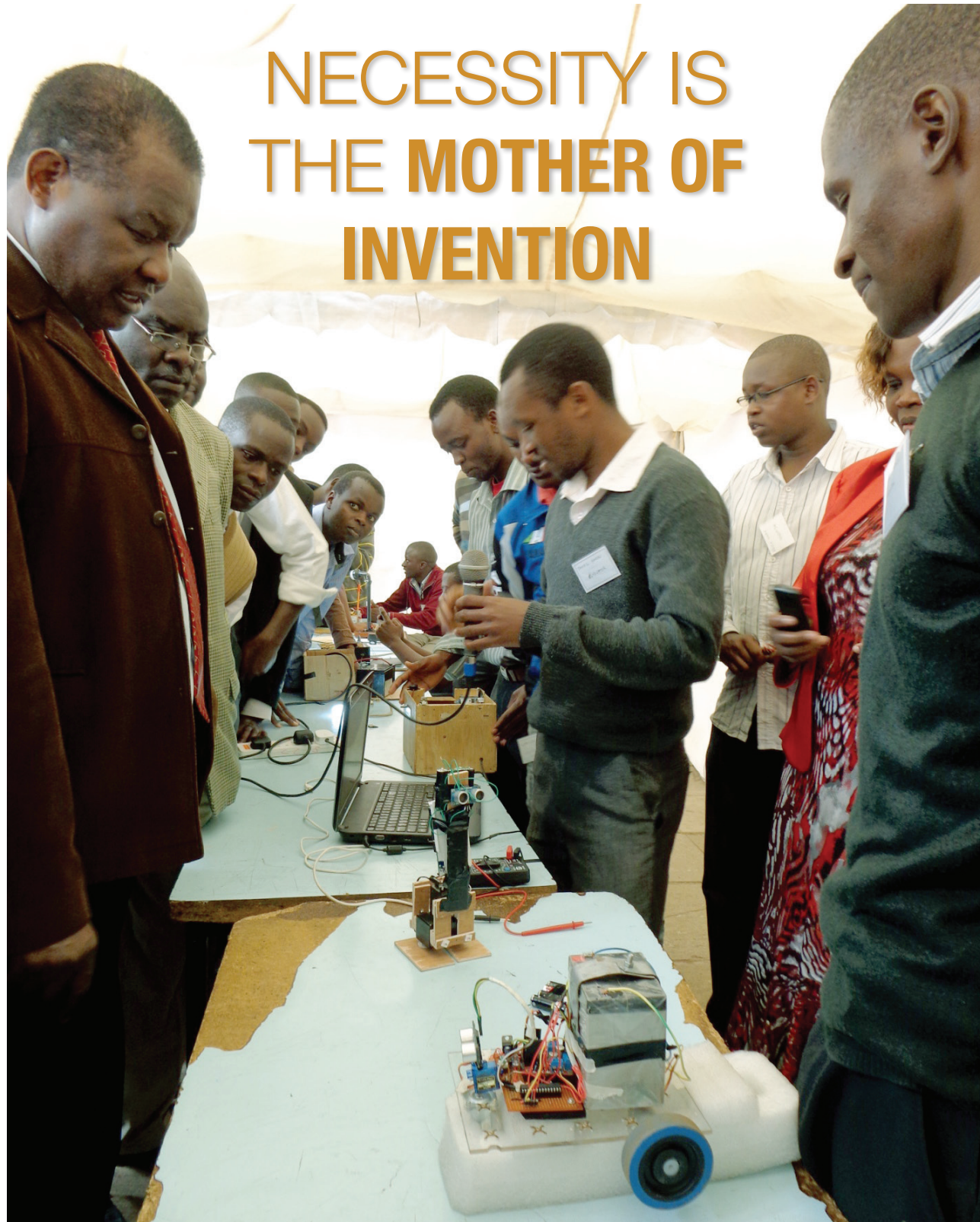
sion for the Gender Committee was held at the Methodist Guest House. Wanjiro worked with the committee and at the end of the 3 days, Draft 3 of the Gender Policy was developed, operational guidelines were discussed and finalized, and two tools – Key Informant Tool and Focus Group Discussion tools were agreed on.

In order to come up with Draft 4 of the Gender Policy, it was vital to have input from the TU-K community. Two Days, 24th and 25th July 2013 was set for this. The Consultant, assisted by two members of the Gender Committee was able to inter-

view Management and Decision makers using the Key Informant Tool from 9am to 2pm on 24th July 2013. The afternoon of 24th and the entire day of 25th July were spent on several focus group discussions. Members of the various group discussions were drawn from; Teaching staff, Students, and Administration under the Integrated Water Resource Management. Information from the Key Informants and the Focus Group Discussion will inform the Policy. After the inclusion of the information, the Draft Gender Policy will be presented to the Management.

The Technical University of Kenya is a key player in the attainment of Vision 2030. Therefore as we align ourselves to our new mandate as a market leader in Technical Education, both men and women have to participate in Science, Technology and Innovation which has been a male dominated field for a long time. The University has taken steps to support women and girls in science and technology studies through mentorship and special scholarships. Key leadership positions in the institution are held by women beyond the Government threshold of 30% TN

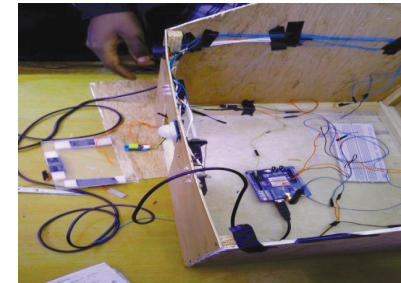
NECESSITY IS THE MOTHER OF INVENTION



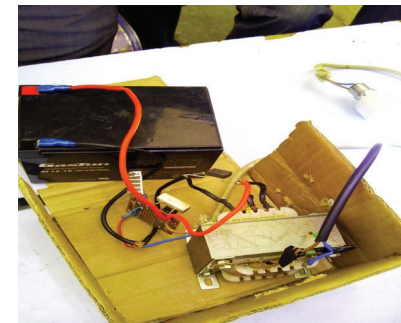
By Omar Mohamed, Sharon Anyango, Samuel Mburu, Simon Ingari and Robert Njoroge

The Association of Engineering Students of the Technical University of Kenya recently held an exposition at the university's red square to showcase their innovation. In attendance were university staff, students and members of the public.

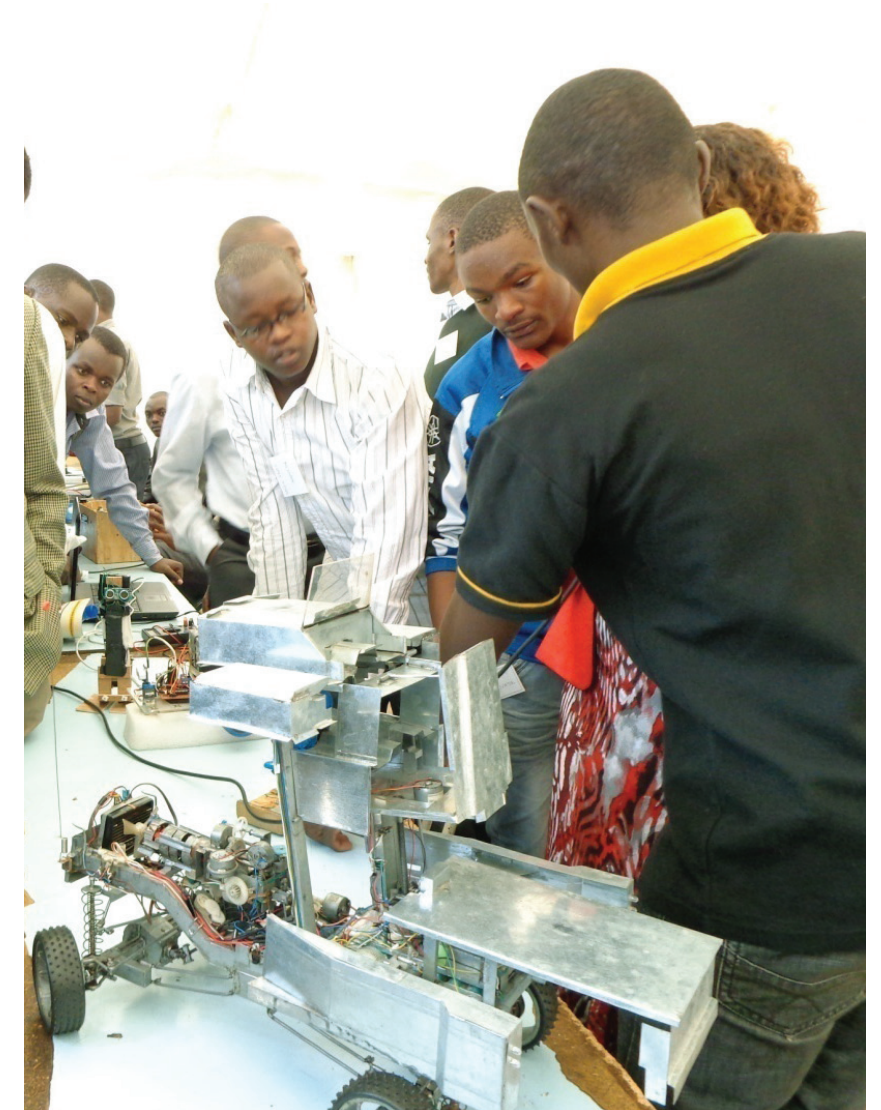
The theme of the expo was, "Creativity and Innovation for the Real World". The event was officially opened by the Executive Dean Faculty of Engineering and the Built Environment Prof. Maina Maringa who welcomed everybody and gave a brief introduction of the day's events.



This shows the model designed for the home security system that detects an intruder by use of sensor using GSM module that notifies the owner.



The model of the emergency light backup system that Felix Kogei presented. The system is connected to power. The battery charged by the power in turn provides light when the electricity goes off.



An Engineering student making a presentation on his innovation

Among the exhibitions that stood out was a water distribution solenoid by Paul Kamande and Dickson Mburu both fourth year students. They came up with the idea with the aim of reducing the usage of booster pumps, a technology that is expensive. The water distributor solenoid contains reservoir tank which is placed on top of the building because pressure increases with depth, the pipes are then installed below the tank and channelled through different floors. The lead bulb goes on when water is flowing and off when it stops.

According to Catherine Waruguru, an engineering student in the Department of Mechanical and Mechatronic Engineering, many accidents are caused by the drivers under the influence of alcohol. To curb such menace, Waruguru came up with alcohol detector system which she proposes that should be installed in a vehicle. "When one enters a car while drunk, it senses alcohol concentration and if high, the car cannot move," she says.

The other innovation was a home security control system which senses an intruder in the house. The machine uses thermodynamic detector for detecting radiation emitted by human being, later received by sensor which in turn alarms the owner about the intruder. By use of mobile phone and android application message is received by the GSM module, the main challenge being the network operator.

Eunice and Julius have designed a pelton wheel which can rotate a turbine, water flow from either water fall or an elevated tank at the top of the house. The turbine on the other hand rotates the mortar which produces electricity. The other innovation shown was the emergency light backup system. The work of this machine is to produce an alternative when electricity goes off.

According to Felix Kosgei, an Electrical Engineering student, silicon controls rectifier charges an alternating current battery which automatically lights when the pow-

er goes off. This will replace the generators currently in use at high cost.

In his closing remarks, the Head of School of Pure and Applied Science (SPAS) Prof. Paul Baki, gave a speech and congratulated organizers, participants and those in attendance. "I am impressed with the Association of Engineering Students for making this event successful. You have truly demonstrated that you are capable of putting your ideas into practice and making use of your time and available resources wisely," said Prof. Baki who went further to explain the importance of innovations and research in the university. He noted that the association is facing a challenge of lack of funds. He called on the government and the industry to support different initiatives and innovation by university students.

Present during the event were Director Industry and Professional Partnerships Prof. Wilson Ogola, Head of School of Engineering Science and Technology (SEST) Dr. Samson Ayugi among other lecturers TN



Vice-Chancellor Prof. Aduol receiving a copy of the Draft Constitution

THE LONG AWAITED STUDENTS CONSTITUTION IS ADOPTED!

Following the elevation of Kenya Polytechnic University College to Technical University of Kenya, there arose a need to revise and rewrite the Students Constitution to reflect and be in conformity with the new status. Furthermore, most students were of the opinion that the constitution that was in operation at the time was inadequate to address their needs and thus was not serving them well.

The realignment of the Students Constitution from that of a university college to that of a fully fledged university necessitated the appointment of a committee to carry out the task of reviewing and rewriting the constitution. The Committee under the Chairmanship of Prof. Maina Matu comprised six members of staff and twenty four students' representatives who were elected directly by the students themselves to represent various schools of the university and to represent various interests such as gender, disability, religious affiliations among others. The members of staff were incorporated in the Committee to provide advice and guidance to the students. However, the task of rewriting the constitution was left solely in the hands of the students' representatives.

The Committee congregated at Co-operative University College, Karen between 7th and 9th February 2013. During this period the Acting Dean of Students, Rev. Fr. Dr. Ndikaru Wa Teresia presented

The realignment of the Students Constitution from that of a university college to that of a fully fledged university necessitated the appointment of a committee to carry out the task of reviewing and rewriting the constitution.

a talk that was centred on the history and development of students' organizations in East Africa. The main objective of his presentation was to show how students' organizations in East Africa have evolved from militarism to politics and currently to sobriety.

During the Karen retreat several documents were distributed to the committee members in order to familiarize themselves with aspects of constitution making that would in the process assist them to make relevant and significant contribution to the task at hand. These documents included the Constitution of Kenya 2010, Universities Act No. 42 of 2012, The Tech-

nical University of Kenya Charter and students' constitutions from other Kenyan universities. The inclusion of students' union constitutions from other universities was intended to ensure that the committee members had points of reference and therefore would not work from positions of ignorance.

As in other constitution making process, the members were divided into groups and each group was assigned a specific task to draft in the students constitution. The draft documents formed the basis of intensive discussions throughout all the sessions. On the whole the discussions were enlightening and very fruitful. TU-K Legal Officer and the External Lawyer ensured that all the documents produced after the discussions conformed to all the legal aspects of such documents and that they were in consonance with the Constitution of Kenya and the Universities Act 2012.

After the three day stint at Karen, the Committee continued working on the proposed students' constitution for several months. Different views on the draft were collated and several amendments were made to the drafted copies. This gave rise to the Students Association of the Technical University of Kenya (SATUK) draft constitution. The Committee members handed over the TUKSA draft constitution to the Vice Chancellor on Tuesday, 25th June, 2013 for onward transmission to the University Council for approval. TU

FIRST ELECTION OF STUDENTS' LEADERS HELD UNDER A NEW CONSTITUTION

After the promulgation of the new constitution of the Students Association of the Technical University of Kenya (SATUK), the students' union elections were held on 30th October, 2013. This was the first election under the new constitution and the new university status. The elections were organized and supervised by TU-K Electoral Board Returning officer Mr. Mishael Motuka, lecturer Department of Geospatial Science and Engineering, assisted by four other board members together with Ag. Dean of Students, Rev. Fr. Dr. Ndikaru Wa Teresia and the two chaplains.

The elections were peaceful and without any nasty incidents previously witnessed. Security was beefed up, the ballot papers were of high quality to discourage, among other things, rigging. There were thirteen polling stations with every School having its own. Due to high number of students, some Schools for instance THE School of Engineering, Science and Technology had three polling stations and the School of Business and Management Studies had two. The process started at 8.00am and ended at exactly 5.00 pm with a significant number of students taking part. The elections involved: ten Executive posts, ten Congressmen/women and rep-

resentatives of men/women hostels.

The university organised a three day induction workshop for the newly elected officials at the Kenya Wildlife Services (KWS) training School in Naivasha from 13th-16th November 2013. The student leaders benefitted from presentations by leaders in university student welfare among them Dr. Julius Kipngetich, Rev. Fr. Dr. Dominic Wamugunda, Ms. Emmy Sumbeiywo, Prof. Henry Etende and the immediate former chairman of the student union, Duncan Kiara.

The following students were elected to the executive office TU

NAME AND POSITION
Ngugi wa Thiong'o - <i>Chairman</i>
Meshack Ian Acholla - <i>Secretary General</i>
Joseph Karugi Chege - <i>Deputy Chairman</i>
Mercy Kerubo Nyakundi - <i>Finance Secretary</i>
David Opaa - <i>Academic Secretary</i>
Gabriel Ndiege - <i>Social Welfare Secretary</i>
Japheth Karisa Luganje - <i>Constitutional Affairs Secretary</i>
Joshua Mwendo Muli - <i>Sports Secretary</i>
Josphine Adel - <i>Gender Affairs Secretary</i>
Nicholas Munywoki - <i>Special Interest Secretary</i>

MESSAGE FROM THE CHAIRMAN



Ngugi wa Thiong'o, Chairman – SATUK

Students' leaders are stakeholders who help bridge the gap between the university administration and the students. They are there to ensure that the students interact effectively with the administrators and vice versa. We seek to provide an effective channel of communication. This will involve creating a platform where students can air their grievances to students' union offices directly at any time

for facilitation. Our Union seeks to work with administration in developing our young university to compete with other universities.

We are looking forward to ensuring sound partnerships with various stakeholders in the corporate world to solve problems such as, accommodation in the university, additional space just to mention but a few. We seek to work towards realizing our vision, "To be a top rated University of Technology in the world." In embracing our technological practices, we will go an extra mile in boosting this vision as far as running our union is concerned.

We also seek to market our young University which has already created a name for itself. This will facilitate marketing our courses alongside the university name.

Our union will be seeking guidance from the administration on how to get in touch with the international Technical Universities in the world; this will provide a bench for growing and maintaining international standards.

We are also looking forward to participating in Community Outreach Programs within the County of Nairobi given that we are one of the two public universities in this County. With facilitation from the university we will be 'giving back to the society'.

TU-K'S SPLENDID PERFORMANCE IN NATIONAL MUSIC FESTIVALS

The Technical University of Kenya had an outstanding performance in the just concluded Kenya National Music Festival held in Nakuru. For the first time the university presented a soprano solo set piece and won the first two positions. TU-K's small choir class pulled a major surprise by beating seasoned performers; Kenyatta, Moi, Maseno and Nairobi Universities. We won with high percentage mark of 91.

The traditional dancers were not left behind, the perennial participants in the festival the *Luhya isukuti* dance carried the day with a percentage of 93 rising from the previous year of 90. The dance which has won the event for four consecutive years has become a household name and main attraction during national events. Last year the dance was recognized by the Permanent Presidential Music Department and invited to entertain the then President and other dignitaries at State House Nairobi. This year, the university presented the Borana dance scoring 87% mark and taking the first position.

TU-K did not abandon its traditional African instruments such as *orutu*, *ohangla*,

TU-K did not abandon its traditional African instruments such as *orutu*, *ohangla*, *chivoti* and *isukuti* drum ensemble.

chivoti and *isukuti* drum ensemble. The students won these classes with very high marks. We also presented and won an African instrumental ensemble class, a group of 16 performers on various traditional music instruments. We presented Western instruments comprising of; the brass, wood wind and a recorder in which we won the first position.

Our English and Kiswahili verse speaking classes were well presented, in solo and choral set pieces. The English choral verse was first while the Kiswahili took the second position. The solo verses were second and third respectively. Overall, we had 12 first positions from 8 of the previous year 2012 TU

OF QUESTIONS WELL-ANSWERED

QUESTION: Why do men act like idiots?
ANSWER: And who said they are acting?

DIFFERENT KINDS OF DOCTORS

This is how doctors can be differentiated:
General Practitioners know nothing and do little. Surgeons know little and do everything. Interns know everything and do nothing. Pathologists know everything and can do everything, but it's usually too late!

THE TWO BLONDES

Two blondes were trying to outdo each other.
The first one bragged, "We are better than you, we were the first to send astronauts to the moon."
The second one, not to be outdone, said, "That's nothing. We'll be the first to go to the sun..."
The first one asked, "But it's too hot there, how will you make it there!?"
And the second answered, "That's not a problem, we'll GO AT NIGHT!!!!"

THE TEACHER

Our teacher talks to herself, does yours?
Yes, but she doesn't realise it, she thinks we're actually listening!

IN AN EXAMINATION ROOM:

What happens during puberty to a boy?
He says goodbye to his childhood enters adultery.

After explaining to a student through various lessons and examples that:
$$\lim_{x \rightarrow 8} \frac{1}{x-8} = \infty$$

I tried to check if she really understood that, so I gave her a different example. This was the result:
$$\lim_{x \rightarrow 5} \frac{1}{x-5} = \infty$$

Where was the American Declaration of Independence signed?
At the bottom.

WITH A LIGHT TOUCH: THE THIEF-CATCHER

A thief-detecting machine was designed in the United States.
It was tested in the US, and in two months, the machine caught fifty thieves.
In India in a month, it caught a hundred thieves.
In Nigeria in a week, it caught five hundred thieves.
In Kiambu, Kenya in ten minutes, THE MACHINE WAS STOLEN!

THE BOARDROOM JOKE

In an Art Direction boardroom meeting one morning, the CEO asked Alex to start his presentation with a joke. He obliged, and on the board, he projected his pay-slip!!!!
TEACHER: Why are you late, Joseph?
JOSEPH: Because of a sign down the road.
TEACHER: What does a sign have to do with your lateness?
JOSEPH: The sign said, "SCHOOL AHEAD, SLOW DOWN!"

SCHOOL MOTTO

Spotted on a Uganda School sign post:
"WITH TIME, AN EGG WILL WALK."

DID YOU KNOW...?

That poor eyesight (myopia) is associated with poor IQ.
That Mercury is the only metal that is liquid at room temperature.
That the Great White (shark) has about 3,000 teeth.
That no matter how hard you squeeze the two pointed ends of an egg, it will NEVER break!!!!
That a 45-kilo person on Earth will weigh 17 kilos on Mars.
That it is impossible to sneeze with your eyes open, and your heartbeat stops (you die) when you sneeze.
That the first letters of the months July through November, in order, spell the name JASON
That a chicken loses its feathers when it becomes stressed.
The first harddisk available for the Apple II had a capacity of only 5 Megabytes.
And 4 of the 5 original designers of the Macintosh computer were left-handed

NEW ACADEMIC APPOINTMENTS

THE university recognizes the importance of academic excellence. Therefore in order to appraise academic standards of the institution, TU-K has recently recruited some of the best lecturers in different fields, to add to the already existing number.

SENIOR LECTURERS

Department of Architecture and Environmental Design
Dr. Sarah W. Gitau, PhD (Informal Settlement Development), University of Central England, 1996; M.A (Housing Administration & Management), UoN, 1988; B.A (Land Economics), UoN, 1985.
Department of Biological Science and Technology
Dr. Florence A. Oloo, PhD (Chemistry), JKUAT, 2003; MSc (Chemistry), University of Ibadan, 1995; B.A (Philosophy and Science of Education), Rome, 1989; BSc (Chemistry), University of Nairobi, 1984.
Department of Economics and Development Studies
Dr. Benson A. Ateng', PhD (Economics), University of Nairobi, 1987; M.A (Economics), UoN, 1977; B.Ed (Economics), UoN, 1975.

Department of Hotel and Restaurant Management
Dr. Eric Onyango Fwaya, PhD, (Hospitality Management), Maseno University, 2012, MSc. (Hospitality Management), Maseno University, 2006, BSc. (Hotel and Institution Management), 2002
Department of Law & Legal Studies
Dr. Omosa M. Ntabo, PhD (Criminology), Busoga University, 2012; M.A (Arts), UoN, 2004; Postgraduate (Diploma in Law), Kenya School of Law, 1991; Bachelor of Law, UoN, 1990.

Department of Nutrition and Dietics
Dr. Victor O. Owino, PhD (Nutrition), Institute of Child Health, University of London, 2006; MSc. (Food Science and Technology), Ghent University, 2000; BSc. (Food Science and Technology), University of Nairobi, 1996.

Department of Tourism and Travel Management
Dr. Geoffrey M. Manyara, PhD (Tourism), University of Wales, 2005; MSc (Leisure and Environments), Wageningen University, 2001; BSc (Tourism), Moi University 1997.

LECTURERS

Department of Biological Sciences and Technology
Dr. James M. Nonoh, PhD (Microbial Ecology), Philipps University, Marburg, 2013; MSc (Microbiology), JKUAT, 2008; BSc (Biological Sciences), JKUAT 2001.
Department of Biomedical Science and Technology
Dr. Edwin K. Murungi, PhD (Bioinformatics), University of Western Cape and Cambridge University, 2011; MSc (Structural biology), University of Western Cap, 2006; B.Pharm, UoN, 2003.
Department of Chemical Science and Technology
Dr. Eric C. Njagi, PhD (Inorganic Chemistry), University of Connecticut, 2012; MSc (Chemical Engineering), Budapest University of Technology and Economics, 2005; BSc (Chemistry), University of Nairobi, 2001.
Department of Computational Mathematics
Dr. Pius N. Kihara, PhD (Statistics), JKUAT, 2012; MSc (Statistics), JKUAT 2007; BSc (Mathematics and Computer Science), JKUAT, 2004.
Department of Public Health
Dr. Tammary C. Esho, PhD (Biomedical Sciences), Katholieke University of Leuven, 2012; MSc (Family and Sexuality Sciences), Katholieke University of Leuven, 2004; Diploma (Clinical Medicine and Surgery), Kenya Medical Training College, 1999.

Department of Technical and Applied Physics
Dr. David Otwoma, PhD (Physics), University of Nairobi, 2013; MSc (Nuclear Science), UoN, 2000, BSc (Physics), UoN, 1987.

PLO LUMUMBA VS A NORMAL HUMAN BEING

Below is DR. PLO Lumumba's interpretation of a normal human being's wisdom:

NORMAL PERSON: People who live in glass houses should not throw stones.

PLO LUMUMBA: Individuals who make their abodes in vitreous edifices would be advised to refrain from catapulting perilous projectiles.

NORMAL PERSON: Twinkle, twinkle, little star

PLO LUMUMBA: Scintillate, scintillate, asteroid minim.

NORMAL PERSON: All that glitters is not gold.

PLO LUMUMBA: All articles that coruscate with resplendence are not truly auriferous.

NORMAL PERSON: Beggars are not choosers

PLO LUMUMBA: Sorting on the part of mendicants must be interdicted.

NORMAL PERSON: Dead men tell no tales
PLO LUMUMBA: Male cadavers are incapable of rendering any testimony.

NORMAL PERSON: Beginner's luck
PLO LUMUMBA: Neophyte's serendipity.

NORMAL PERSON: A rolling stone gathers no moss

PLO LUMUMBA: A revolving lithic conglomerate accumulates no congeries of small, green, biophytic plant.

NORMAL PERSON: Birds of a feather flock together

PLO LUMUMBA: Members of an avian species of identical plumage tend to congregate.

NORMAL PERSON: Beauty is only skin deep

PLO LUMUMBA: Pulchritude possesses solely cutaneous profundity.

NORMAL PERSON: Cleanliness is godliness

PLO LUMUMBA: Freedom from incrustations of grime is contiguous to rectitude.

NORMAL PERSON: There's no use crying over spilt milk

PLO LUMUMBA: It is fruitless to become lachrymose of precipitately departed lactile fluid.

NORMAL PERSON: You can't try to teach an old dog new tricks

PLO LUMUMBA: It is fruitless to attempt to indoctrinate a superannuated canine with innovative maneuvers.

NORMAL PERSON: Look before you leap

PLO LUMUMBA: Surveillance should precede saltation.

NORMAL PERSON: He who laughs last, laughs best

PLO LUMUMBA: The person presenting the ultimate cachinnation possesses thereby the optimal cachinnation.

NORMAL PERSON: All work and no play makes Jack a dull boy.

PLO LUMUMBA: Exclusive dedication to necessitous chores without interludes of hedonistic diversion renders Jack a hebeticulous fellow.

NORMAL PERSON: Where there's smoke, there's fire!

PLO LUMUMBA: Where there are visible vapours having their provenance in ignited carbonaceous materials, there is conflagration.



THE TECHNICAL UNIVERSITY OF KENYA



EDUCATION AND TRAINING FOR THE REAL WORLD

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