



United Nations
Educational, Scientific and
Cultural Organization



COMMISSION FOR
SCIENCE TECHNOLOGY AND
INNOVATION



University of Nairobi

Africa Engineering Week:

MENTORING FOR MORE ENGINEERS FOR A SECURE AND SUSTAINABLE FUTURE

As one of the oldest professions in the world, engineers have played an indisputable role in shaping the world we live in today. Their understanding of structures helped build many of the world’s heritage sites including pyramid Fields from Giza to Dashur and the hydrological systems of the Angkor Complex in Cambodia. They have also built our communication networks from the early electrical telegraphs to the cyberspace of today. It is therefore correct to assert that ‘most of the broader history of civilization, of economic and social relations is also the history of engineering, engineering applications and innovation” (UNESCO report, 2010:30).

Engineers are vital in addressing basic human needs, in alleviating poverty, in promoting secure and sustainable development, in responding to emergency situations, in reconstructing infrastructure, in bridging the knowledge divide and in promoting intercultural cooperation. They use scientific knowledge and mathematics to create technologies and infrastructure that address contemporary issues, and connect social needs with appropriate technological innovation and commercial applications. Unfortunately, despite their social and economic importance, there is an increased decline in enrolment in engineering studies which raises concern on the consequences for future development. A pertinent issue is the shortage of engineers that needs to be brought to the public’s attention and that needs to be addressed by all national governments, international organizations, civil societies, industries and academic institutions alike.

The shortage of engineers is a major concern particularly in Africa where declining enrolment of young people especially women has and continue to be experienced. Addressing sustainable development within current climate change challenges will require innovative engineering and technology-based solutions. Engineering capacity and competence building activities are critical to ensure an adequate supply of engineers to work on these global challenges. Such activities are particularly important in Africa, where the per capita number of engineering professionals is lower than in other regions. Given this engineering deficit, activities that promote awareness of engineering as a career as well as demonstrate how youth studying science, technology, engineering and mathematics (STEM) can become part of the solution have to be emphasized as a priority. To increase engineering capacity in Africa, the UNESCO Engineering Initiative (UEI) in cooperation with our partner Intel Corporation established an Africa Engineering Week. The Africa Engineering Week is to be celebrated during the second half of each year.

Experience from other countries indicate that many countries, including the United States, Canada, Australia, UK, and Ireland currently hold national engineering weeks, which have been very successful in promoting awareness of engineering as a career among students as well as demonstrating the need for engineering to achieve sustainable development through the three pillars (social, economic, and environmental). Activities that celebrate engineering as well as educational programs that encourage students to pursue engineering studies are held during this week. The activities during Africa Engineering Week will increase the visibility of engineering, which is particularly important in the continent where there is a great need for engineers to achieve the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs).

Africa Engineering Week in Kenya

UNESCO believes that more people would be attracted to engineering as a career if the role of engineering was more visible and better understood. In this regard, UNESCO and Kenya's National Commission for Science, Technology and Innovation (NACOSTI) are working to raise awareness on the importance of engineering for sustainable development. Celebrations for the Africa Engineering Week are expected to take place during the first week of September of every year. For this year, the celebrations for the Africa Engineering week will take place from 2nd to 4th September, 2015 at the University of Nairobi grounds. UNESCO Regional office for Eastern Africa in Nairobi is not only partnering with the Ministry of Education Science and Technology (MoEST), the National Commission for Science Technology and Innovation (NACOSTI), but also with universities and other key stakeholders in the field of engineering to organize the Africa Engineering Week to be celebrated by among others, mentoring activities in STEM for secondary school students from Nairobi and the environs. The following is envisaged to take place during this Week:

- Mentoring events, such as Introduce a Girl to Engineering Day, where professional engineers talk to girls on the importance of engineering for society and give demonstrations on what the various courses in engineering entail as well as introduce practical applications of STEM;
- Organization of public awareness events, where students can learn about engineering through hands-on activities and demonstrations (robotics, etc.), hosted by local engineering chapters and national organizations. In addition an introduction of educational activities that can be incorporated in the science curriculum of Primary and secondary school students to motivate interest in STEM will be done;
- Mentoring events such as introducing students to STEM and especially the importance of technology in communication, conferences and solving of societal problems;
- University activities and events, to highlight the engineering disciplines and introduce youth to undergraduate and postgraduate studies of engineering through lab demonstrations, in the different Engineering laboratories;

Objectives

The objectives of the Africa Engineering Week activities include:

- to increase the visibility of engineering and its role in sustainable development,
- to encourage students to study engineering by supplementing STEM curriculum with practical engineering applications, and
- to raise awareness among governments and the general public on the need to increase participation in engineering courses for enhanced economic and sustainable development.

Overview of Activities

- Organize School Visits to the University School of Engineering where professional engineers talk to Secondary school students about practical applications of Science, Technology, Engineering and Mathematics (STEM);
- Organize exhibitions by ICT and Engineering Companies where students are mentored in Engineering through demonstrations and examples;
- Organize mentoring activities for girls by having professional female engineers talk to high school girls about engineering careers

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Africa Engineering Week in Kenya Programme

Day 1: Opening Ceremony and Mentoring Talks

| TIME | ACTIVITY | HOST |
|-------------|--------------------------------|------------------------|
| 8.00-8.30 | ARRIVAL & RECEPTION | ALL |
| | OPENING REMARKS | |
| 8.30-8.50 | NACOSTI | NACOSTI-DIR |
| 8.50-9.10 | MOEST | MOEST- REP |
| 9.10-9.30 | UNESCO | UNESCO-REP |
| 9.30-9.50 | UoN | DEAN, SoE |
| 9.50-10.20 | IEK | CHAIR, IEK |
| 10.20-11.00 | PHOTO SESSION/TEA BREAK | ALL |
| | Mentoring Talks | |
| 11.00-12.00 | STEM | CECILIA/SAFCOM/FAITH |
| 12.00-12.30 | Life Skills | ALICE OCHANDA |
| 12.30-1.00 | Life as an Engineering Student | ESA-REP |
| 1.00-2.00 | HEALTH BREAK | ALL |
| | Professional Talks | |
| 2.00-2.30 | Presentation by IEK | IEK-REP |
| 2.30-3.00 | Career Talk/ESA | DR. Eng. KARANJA (UON) |
| 3.00-4.30 | Mentoring on Technology | DAA Technology, UK |
| 4.30-5.00 | Q&A | |
| | End of Day 1 | |

Day 2: Engineering Laboratory Visits

| TIME | DEPARTMENTS | | | | | |
|-------------|--------------|------|-------|-----|------|----------|
| | EBE | ELEC | CIVIL | GST | MECH | |
| 9.00.-10.00 | G1 | G2 | G3 | G4 | G5 | ALL LABS |
| 10.00-10.30 | TEA BREAK | | | | | ALL |
| 10.30-11.30 | G2 | G1 | G4 | G5 | G3 | ALL LABS |
| 11.30-12.30 | G3 | G4 | G5 | G2 | G1 | ALL LABS |
| 12.30-1.30 | G4 | G5 | G1 | G3 | G2 | ALL LABS |
| 1.30-2.30 | LUNCH BREAK | | | | | ALL |
| 2.30-3.30 | G5 | G3 | G2 | G1 | G4 | ALL LABS |
| 3.30-4.30 | Q & A | | | | | ALL |
| | End of Day 2 | | | | | |

Day 3: Exhibition Stands Visits and Closing Ceremony

| | EXHIBITION STANDS | | | | | |
|--------------|---|-----|-----|-----|---------|------------|
| TIME | IEK | SAF | DAA | SoE | NACOSTI | |
| 8.00.- 9.00 | G1 | G2 | G3 | G4 | G5 | ALL STANDS |
| 9.00 – 10.00 | G2 | G1 | G4 | G5 | G3 | ALL STANDS |
| 10.00 -10.30 | TEA BREAK | | | | | ALL |
| 10.30-11.30 | G3 | G4 | G5 | G2 | G1 | ALL STANDS |
| 11.30-12.30 | G4 | G5 | G1 | G3 | G2 | ALL STANDS |
| 12.30- 1.30 | G5 | G3 | G2 | G1 | G4 | ALL STANDS |
| 1.30-2.30 | LUNCH BREAK | | | | | ALL |
| 2.30-5.00 | CLOSING /PLENARY | | | | | |
| 2.30-3.30 | OPEN DISCUSSIONS | | | | | ALL |
| 3.30-4.30 | FEEDBACK | | | | | STUDENTS |
| 4.30-5.00 | PRESENTATION OF CERTIFICATES TO PARTICIPATING SCHOOLS | | | | | ALL |
| 5.00 | DEPARTURE | | | | | ALL |

Note:

G1...G5: Student Groups

School Engineering Laboratories

EBE: Environmental and Biosystems
 ELEC: Electrical and Information Engineering
 CIVIL: Civil and Construction Engineering
 GST: Geospatial and Space Technology
 MECH: Mechanical and Manufacturing Engineering

Exhibition Stands

IEK: Institution of Engineers of Kenya
 SAF: Safaricom
 DAA: DAA Technology
 SoE: School of Engineering
 NACOSTI: National Commission for Science Technology and Innovation