

SECTION A: COMPENDIUM OF RESEARCH ACTIVITIES

1. FACULTY OF SCIENCE

1.0 DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCES

- Topic:* Food Security indicators and balance sheet in LVB Basin.
Researcher(s): **Dr. P. Mwita**, V. Masanja, R. Odhambo and C. Muyanga
Status of Research: Ongoing.
- Topic:* Vehicle Routing Problem (VRP) in the Presence of Time Dependent Congestions' European Journal of Operational Research. 147 : 1231 – 1242.
'Optimal Multiobjective Model to Ease Traffic Congestion' accepted for African Journal of Science & Technology.
Researcher(s): **H.M. Humphreys**, Odhiambo, R.O., Waweru, R.O., and Orwa, G.O.
Status of Research: Ongoing.
- Topic:* Text-Book 'Ordinary Differential Equations'.
Researcher(s): **H.M. Humphreys**, Prof. M.N. Kinyanjui.
Status of Research: Completed.
- Topic:* Probability Distributions of One Random Variable'.
Researcher(s): **H.M. Humphreys** Uppal, S.M., Odhiambo, R.O., Orwa, G.O.
Status of Research: Completed.
- Topic:* Developing a regression model to predict year 2 overall averages from year 2 first semester averages for hopeful maths majoring students.
Researcher(s): **H.M. Humphreys**, G.O.Orwa, J.Kiingati, V.S.Andika.
Status of Research: Ongoing.
- Topic:* Text-Book 'Mathematical Proficiency for ALL.'
Researcher(s): **S. M. Mwalili**.
Status of Research: Ongoing.
- Topic:* Zero-inflated regression for count data *Statistical Methods in Medical Research*, 2008.
Researcher(s): **S. M. Mwalili**, E.L. Lesaffre, D. Declerk.
Status of Research: Completed.
- Topic:* On estimation of misclassification table *Statistical Modeling*, 2008.
Researcher(s): **S. M. Mwalili**, E.L. Lesaffre, H. Kuenhoff.

Status of Research: Completed.
Topic: Robust Estimation of Finite Population Total Using Local Polynomial Regression.
Researcher(s): Prof. R. O. Odhiambo, R. **Mageto T.**
Status of Research: Completed.

Topic: Robust Estimation of Finite Population Total Using Quantile Regression.
Researcher(s): **Prof. R. O. Odhiambo**, Dr. P. Mwita, Andrew Kinyita.
Status of Research: Completed.

Topic: Modelling HIV/AIDS epidemic with reference to Malawi.
Researcher(s): **Daisy Salifu**, Dr. R. O. Simwa, Prof. R. Odhiambo, Dr. P. Mwita.
Status of Research: Ongoing.

Topic: Estimation of conditional quantiles and Scale functions
Researcher(s): **Benjamin Muema**, Dr. P. Mwita and Prof. R. Odhiambo.
Status of Research: Ongoing.

Topic: Estimation of population mean in survey with imported data.
Researcher(s): **Beatrice G. Gathodu.**
Status of Research: Ongoing.

Topic: Bayesian analysis of multivariate binary data with application to caries research.
Researcher(s): **Andika, V.S.**
Status of Research: Completed.

Topic: Modeling Exchange Rate Volatilities Using GARCH Models and Pricing An Exchange Option For The Kenyan Market.
Researcher(s): **Jane Akinyi.**
Status of Research: Completed.

1.1 DEPARTMENT OF PURE AND APPLIED MATHEMATICS

<i>Topic:</i>	On the spectra of Triangular and almost triangular matrices on sequence spaces.
<i>Researcher(s):</i>	Mr. Akanga J.R.
<i>Status of Research:</i>	Ongoing.
<i>Topic:</i>	A study of a hydromagnetic flow field of a rotating fluid system bound by parallel plates.
<i>Researcher(s):</i>	E. Mwenda.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Heat and Mass transfer past a semi-infinite porous plate in MHD flows.
<i>Researcher(s):</i>	Okelo. J.A.
<i>Status of research:</i>	Ongoing.
<i>Topics:</i>	Heat transfer turbulent flows in an enclosure.
<i>Researcher(s):</i>	Dr. Sigey J.K. , Gatheri, Bethshage.
<i>Status of research:</i>	Completed
<i>Topic:</i>	A numerical study of heat transfer in an enclosure
<i>Researcher(s):</i>	Dr. Sigey J.K.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	MHD flows.
<i>Researcher(s):</i>	Dr. Sigey J.K. , Njogu.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Extension on three Dimension Buoyancy driven turbulent natural convection in a closure.
<i>Researcher(s):</i>	Dr. Sigey J.K. , Kinyanjui, Gatheri.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Heat and mass transfer in MHD free flow with hall and ionslip currents, mass diffusion and radiation absorption on the spectra of Triangular and almost triangular matrices on sequence spaces.
<i>Researcher(s):</i>	Kwanza. J. K.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Numerical simulations of a hydrodynamic fluid in a rotating system with constant suction.
<i>Researcher(s):</i>	D. N. Njogu.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Magneto hydrodynamic turbulent fluid flow between two parallel plates with injection and constant magnetic field (PhD).
<i>Researcher(s):</i>	D. N. Njogu.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	FEM in Couette fluid flow.
<i>Researcher(s):</i>	Luvaha J.
<i>Status of research:</i>	Ongoing.

<i>Topic:</i>	Finite element analysis of stress concentration.
<i>Researcher(s):</i>	Luvaha J.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Investigation of forces exerted by the fluid on a submerged finite plate.
<i>Researcher(s):</i>	Kinyanjui M.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Finite Difference analysis of MHD flow past semi infinite plate
<i>Researcher(s):</i>	Kinyanjui M.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Some investigations into thermo hydrodynamic lubrication in engineering systems; a case study of the step bearing.
<i>Researcher(s):</i>	Kiogora Phineas Roy, Kinyanjui M.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	A modified second order macroscopic traffic flow model with suppression of shock waves to enhance traffic flow.
<i>Researcher(s):</i>	Mark E.M.Kimathi, Mathew Kinyanjui and Johana Sigey.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Numerical study in effects of a transverse magnetic field in turbulent natural convection flow in a cubical enclosure.
<i>Researcher(s):</i>	Ndungu Peter Kanyingi, John Kwanza, Mathew Kinyanjui.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	MHD Stokes free Convection flow past infinite vertical porous plate subjected to constant heat flux with ion-slip current and radiation absorption. Authors:
<i>Researcher(s):</i>	Emma Marigi, Mathew Kinyanjui , J. Kwanza.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Analysis of turbulent flow for a vertical infinite plate in a dissipative fluid with Hall Current.
<i>Researcher(s):</i>	Dr. Mathew Kinyanjui , Willys Okinyi.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Investigation of Fluid on a flat plate K.A dissipative rotating fluid with hall current.
<i>Researcher(s):</i>	Jade Abuga, Kinyanjui.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Zhang's second problem order traffic flow model and its application to the Nairobi-Thika Highway in Kenya.
<i>Researcher(s):</i>	Kimathi, Kinyanjui.
<i>Status of research:</i>	Ongoing.

1.2 DEPARTMENT OF CHEMISTRY



Chemistry production unit products

- Topic:* Development and evaluation of anti-aging cosmetic product derived from plants and ruminant oil extracts.
- Researcher(s):* **Prof. Keriko J.**
- Status of research:* On going.
- Topic:* Determination of Lipid contents, fatty acids composition, the levels of EPA and DHA in some common fish species found in Kenyan waters.
- Researcher(s):* **Prof. Keriko J.**
- Status of research:* On going.
- Topic:* Diversity and Pesticide Biodegrading Potential of Micro organism in horticultural farms in Kenya.
- Researcher(s):* **Dr Tsanuo M.K.,** Dr Magoma G., Prof Boga H. and Prof Ngamau
- Status of research:* On going.
- Topic:* Isolation of anti biotic and enzyme producing bacteria from termites guts.
- Researcher(s):* **Tsanuo M.K.,** Prof. Boga, H and Dr Lomo
- Status of research:* On going.
- Topic:* Research on biogas from animal wastes.
- Researcher(s):* **Prof. Keriko J.**
- Status of research:* On going.

<i>Topic:</i>	Search for biodiesel from Yellow Oleander (<i>Theratia permilina</i>) plant.
<i>Researcher(s):</i>	Prof. Keriko J.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Determination of available energy from selected local food stuff.
<i>Researcher(s):</i>	Dr. Okong'o E.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Metal Biosorption and Special Studies using green and brown Algae.
<i>Researcher(s):</i>	Dr Anam O. , Dr Kiptoo J. and Dr Oyaró N.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Assessment of Gasoline and Diesel fuels adulteration in Kenya.
<i>Researcher(s):</i>	Dr. Oyaró , Prof. Gachanja A., Dr. Onditi A.O. and Dr. Kiptoo J.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Asthmatic Respiratory symptoms among textile Production workers in Nairobi, Kenya.
<i>Researcher(s):</i>	Dr Anam O.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Development of FIA –HG – Phase separation interfaces for determination of arsenic in waters and rice by AAS.
<i>Researcher(s):</i>	Prof. A. N. Gachanja and Dr. Onditi Anam
<i>Status of research:</i>	On going.
<i>Topic:</i>	Selected Heavy metals and Essential elements in milk – by AAS.
<i>Researcher(s):</i>	Dr. Onditi Anam
<i>Status of research:</i>	On going.
<i>Topic:</i>	Major and Trace Elements in cement by AAS.
<i>Researcher(s):</i>	Dr. Onditi Anam
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Determination of Heavy Metals in Rice grown in Mwea by AAS.
<i>Researcher(s):</i>	Dr. Onditi Anam
<i>Status of research:</i>	Completed.
<i>Topic:</i>	The aggregation pheromone of adult Malagasy migratory locust L.M. Capito and its effects on conspecific nymphal stages.
<i>Researcher(s):</i>	Dr Ndung'u , M., Dr Njagi, P., Prof. Hassannali, A. And Andrianaina R. H.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Chemical signals mediating predation of a specialized spider <i>Evarelia culicivira</i> .
<i>Researcher(s):</i>	Dr. Ndung'u M. and Delaide, M.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Pentential of endophytes and Rhizosphere bacteria as sources of

Researcher(s): antimicrobial compounds.
Dr. Ndung'u M. and Kaaria, P
Status of research: Ongoing.

Topic: Medicinal Plants – Development of biopesticides.
Researcher(s): **Dr. Ndung'u M.**
Status of research: On going.

Topic: The nymphal aggregation pheromone of Malagasy migratory locust, *Locusta migratoria capito* (Saussure, 1984) (Orthoptera: Acrididae) and its effects on adult maturation and oviposition.
Researcher(s): **Dr. Tsanuo M.K.**, Dr Kutima H., Dr Njagi, P. Prof Hassanali, A and Razafindranaivo V.
Status of research: Ongoing.

Topic: Effects of Dichlorodiphenyl Trichloroethane, DDT, on Microbial diversity and exploring Potential for Bioremediation by Soil Micro organism.
Researcher(s): **Dr. Tsanuo M.K.**, Prof, Boga H. Prof. Muigai A. Dr Kiyukia, C. and Mwangi K.
Status of research: Ongoing.

1.3 DEPARTMENT OF BIOCHEMISTRY

- Topic:*
1. Identification and characterization of novel EST-SSRs Markers and screening for Polymorphism in selected Cassava Germplasm – collaborating with International Institute of Tropical Agriculture (IITA) – MSc. Project.
 2. Prospecting for a biofertilizer in banana bacterial endophytes – Funded by JKUAT, 2007 (Collaborator).
 3. Improving Kenyan basmati rice quality and production through physico-chemical and molecular characterization.
 4. Screening for Medicinal Plants for the Activity against selected human infective Trypanosomes – Funded by JKUAT, 2005 (PI).

Researcher(s): **Dr. Esther N. Magiri.**

- Status of research:*
1. Ongoing.
 2. Ongoing.
 3. Ongoing.
 4. Ongoing.

- Topic:*
1. Screening Medicinal plants for activity against trypanosomes
 2. Sequencing of Chikungunya virus genome
 3. Prevalence of artemisinin and sp resistance gene markers in *Plasmodium falciparum* and gene flow patterns in malarial zones in Kenya
 4. Diversity and pesticide biodegradation potential by microorganisms from Horticultural farms in Kenya.

Researcher(s): **Prof. Gabriel N. Magoma.**

- Status of research:*
1. Ongoing.
 2. Completed.
 3. Ongoing.
 4. Ongoing.

- Topic:*
1. Characterization of glycosidases from extremophiles obtained from Kenyan soda lakes and hot springs.
 2. Genotyping of dehydrofolate synthase and dehydriopteroate synthase of *Plasmodium falciparum*.
 3. Studies on multicatalytic protease complexes from trypanosome *Brucei brucei*.

Researcher(s): **Dr. Peter Lomo.**

- Status of research:*
1. Ongoing.
 2. Ongoing.
 3. Ongoing.

- Topic:*
1. Determination of Papain and Chymopapain content in fruits of papaya varieties of Kenya.
 2. Biochemical determination of *Sclerotinia sclerotiorum* resistance in sunflower varieties of Kenya.
 3. Developing aseptic dusting powder from Aloe turkanensis extract.
 4. Developing a portable Biosensor for oxidative stress Lead cause of Tumorigenesis.

Researcher(s): **Dr. Daniel W. Kariuki.**

- Status of research:*
1. Ongoing.
 2. Ongoing.
 3. Ongoing.
 4. Ongoing.

- Topic:*
1. Lake Victoria Water Catchment Management and conservation for sustainability.
 2. Effects of Pentamidine treatment on blood sugar levels in vervet monkeys (*Cercopithecus chlorecelons*) the *Trypanosoma brucei* rhodesiense sleeping sickness model.
 3. In search of markers for safe and simple diagnosis of Tryposomosis.
- Researcher(s):* **Dr. Simon N. Karanja.**
- Status of research:*
1. Ongoing.
 2. Ongoing.
 3. Ongoing.
- Topic:*
1. Lake Victoria water catchment Management and conservation for sustainability.
 2. Effects of Pentamidine treatment on blood sugar levels in vervet monkeys (*Cercopithecus chlorecelons*) the *Trypanosoma brucei* rhodesiense sleeping sickness model.
 3. In search of markers for safe and convenient diagnosis of Tryposomosis.
- Researcher(s):* **Dr. Naomi Maina.**
- Status of research:*
1. Ongoing.
 2. Ongoing.
 3. Ongoing.
- Topic:*
1. Use of Bioinformatics tools in analysis and identification of novel drugs and vaccines.
 2. Characterization of potential vaccine candidates from midgut of *Glossina pallidipes*.
- Researcher(s):* **Dr. Johnson K. Kinyua.**
- Status of research:*
1. Ongoing.
 2. Completed.
- Topic:*
1. Trypanotolerant candidate gene analysis in bovine and mice.
 2. Studies on malarial parasite resistance to lumenfantrin, piperaquine and Amodiaquine.
- Researcher(s):* **Dr. Joseph K. Ng'ang'a.**
- Status of research:*
1. Completed.
 2. Ongoing.
- Topic:* Characterization of tsetse Olfactory receptor proteins.
- Researcher(s):* **Mr. Steven G. Nyanjom.**
- Status of research:* Ongoing.
- Topic:*
1. Epidemiology of Hepatitis B in Marsabit District.
 2. Studies on chloroquine and sulphadoxin resistance in malarial Parasites.
- Researcher(s):* **Dr. Jane Ngaira.**
- Status of research:*
1. Ongoing.
 2. Ongoing.
- Topic:* Epidemiology of Kala Azar in South Sudan.

Researcher(s): **Dr. Venny Nyambati.**
Status of research: Ongoing.

Topic: Prevalence of artemisinin and sp resistance gene markers in *Plasmodium falciparum* and gene flow patterns in main malarial zones of Kenya.

Researcher(s): **Ms. Laura Wangai.**
Status of research: Ongoing.

1.4 DEPARTMENT OF BOTANY

Topic: Resource capture in *Jatropha* and *tarconanthus* important sources of biofuels in semi arid Kenya.

Researcher(s): **Kuria B., Muthuri C.W.,** Ong C.K. and Black C. R.

Status of research: Ongoing.

Topic: Isolation and characterization of Microbial Communities in Termite guts

Researcher(s): **Boga H.I.,** Tsanuo M.K., Wamunyokoli F., and A.W.T Muigai.
Status of research: Ongoing.

Topic: Characterization of enzymes and bioactive metabolites from Actinomycete Species.

Researcher(s): **Boga H.I.,** Tsanuo M.K., Kinyua, Wamunyokoli F., Masiga D., and Lwande W.

Status of research: Ongoing.

Topic: The Impact of heavy metal pollution and other human activities on Lake Victoria Wetlands

Researcher(s): **Boga H.I.,** Ikingura J., Mutakyawa M. and E. Barifaijo

Status of research: Ongoing.

Topic: Isolation and characterization of pesticide degrading microorganisms from soil/termites.

Researcher(s): **Boga H.I.,** Tsanuo M.K. and Magoma G.
Status of research: Ongoing.

Topic: Isolation and characterization of actinomycetes from protected habitats.

Researcher(s): **Boga H.I.,** Dan Masiga, Okech M. and Lwande W.
Status of research: Completed.

Topic: Characterization of microbial communities in Soda Lakes.

Researcher(s): Boga H.I., and Mwirichia R.K.
Status of research: Ongoing.

- Topic:* Assessing the impact of Bt-Maize delta-endotoxin on soil microbial communities.
Researcher(s): Boga H.I., Kahangi E, Lenga F.K., Jefwa J., Mugo S, Masiga D.
Status of research: Ongoing.
- Topic:* Studies on Phytochemical and antimicrobial effects of extracts from plants of medicinal value in Kenya.
Researcher(s): **Muthuri, C.W**, Epuri, K. Murungi, K., Wafula, N. Neondo, O. Hussein, L. A.
Status of research: Ongoing.
- Topic:* Analysis of genetic diversity and relationship of pearl millet and germplasm from West Africa using simple sequence repeats (micro-satellites) molecular markers.
Researcher(s): Okun D., Budambula, N., **Muthuri, C.W.** and Makobe M.
Status of research: Ongoing.
- Topic:* Comparative performance and water use of different eucalyptus clones.
Researcher(s): Shem Kuya, Muthuri, C.W., Ong CK
Status of research: Ongoing.
- Topic:* Isolation and identification of banana endophytic bacteria and determination of their role in banana growth and nutrition.
Researcher(s): Matiru, V., Muthuri, C., Magiri, E and Ngamau Catherine.
Status of research: Ongoing.
- Topic:* Ecological adaption and utilisation of Bamboo Resource In Kenya.
Researcher(s): Murage, H., **Muthuri, C.W.**, Kamau Ngamau, Ong, C.K. and Black, C. R.
Status of research: Complete.
- Topic:* Yellow oliender project, Convener of the agronomy component university funded.
Researcher(s): Keriko J, **Muthuri CW, Ochora JM, Makobe M, et.al**
Status of research: Ongoing.
- Topic:* **Phytochemical and antimicrobial studies** on plants of medicinal value in Kenya.
Researcher(s): **Muthuri, C.W.**, L. M. Mwapagha., M. I. Mukenya, Martha, M. and. Z.,M. Hussein.
Status of research: Ongoing.
- Topic:* Bioprospecting for novel microorganisms from the environment.
Researcher(s): **Budambula, N.L.M,** Ogot, H.A. and Ndung'u, P.W.
Status of research: Ongoing.
- Topic:* Bacteriological analysis of River Ruiru.
Researcher(s): **Budambula, N.L.M.** and Mugweru, J.
Status of research: Ongoing.

- Topic:* Bacteriological response to treatment of pulmonary Tuberculosis in patients receiving Highly Active Antiretroviral Therapy (HAART) at Vihiga District Hospital.
- Researcher(s):* Kwange, S.O. and **Budambula N.L.M**
- Status of research:* Completed.
- Topic:* Prevalence of latent tuberculosis in HIV positive patients attending comprehensive care centre at Kakamega Provincial Hospital
- Researcher(s):* Kisato, V.A and **Budambula, N.L.M.**
- Status of research:* Completed.
- Topic:* Laboratory surveillance on the prevalence Of *Rotavirus* and *Campylobacter jejuni* caused diarrhea and antibiotic susceptibility Of *Salmonella*, *Shigella* and *Vibrio cholerae* in Bondo and Siaya districts in 2007.
- Researcher(s):* Okoth, E.O. and Budambula, **N.L.M.**
- Status of research:* Completed.
- Topic:* Research on possible commercialisation of Kenyan medicinal plants for management of HIV-AIDS, Malaria and Crop pests.
- Researcher(s):* **Njoroge, G.N.** et al.
- Status of research:* Ongoing.
- Topic:* Agrobiodiversity conservation, case studies in pollination, Mwingi.
- Researcher(s):* **Njoroge, G.N, et al.**
- Status of research:* Ongoing.
- Topic:* Laboratory surveillance of cholera in Nyanza Province in 2007
- Researcher(s):* Okoth, E. O., Odhiambo, S. G. and **Budambula, N. L. M.**
- Status of research:* Ongoing.
- Topic:* Field evaluation of seeds of somaclonal variants in search of salinity tolerant sorghum (*Sorghum bicolor* (L) Moench) for growth in arid and semi – arid regions along with molecular characterisation using SSR markers.
- Researcher(s):* **M. N. Makobe**, M. Imbuga, **C. Muthuri**
- Status of research:* Ongoing.
- Topic:* Intergrated salt – artemia production and mariculture in a mangrove wetland at the Kenya coast.
- Researcher(s):* **J. G. Wakibia** et al
- Status of research:* Ongoing.
- Topic:* Floral Biology and pollination of highland coffee *Coffea arabica* in District. Kenya.
- Researcher(s):* **Rebecca Karanja**, Prof. G. Njoroge, Prof. L.E. Newton & Dr Mary Gikungu.
- Status of research:* Ongoing.
- Topic:* Documentation of pollinators of various traditional crops grown in Mwingi District: Case study in Agro-biodiversity F.A.O
- Researcher(s):* **Prof. G. Njoroge** and Rebecca Karanja.

<i>Status of research:</i>	Completed.
<i>Topic:</i>	The species habitat interactions in the control of the invasive <i>prosopis juliflora</i> in Lake Baringo ecosystem.
<i>Researcher(s):</i>	Gichua, K.M. , Njoroge, G. N. Shitanda, Ward, D.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Studies on the tissue culture of <i>Mondia whytii</i> . An indigenous medicinal herb.
<i>Researcher(s):</i>	Njenga, P.K. , J.W. Kahia.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Studies on the reproductive biology, propagation protocols and conservation strategies of <i>Ixora scheffleri</i> .
<i>Researcher(s):</i>	Njenga, P.K. , J.W Kahia, V.W. Ngumi.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Ethnobotanical surveys and conservation studies of Kenyan medicinal plants.
<i>Researcher(s):</i>	Njenga, P.K. , M. Wahu, V.W.Ngumi
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Propagation, molecular characterisation and ethnobotanical survey of <i>strychnos heningsii</i> .
<i>Researcher(s):</i>	Njenga, P.K. , M. Wahu, V.W.Ngumi
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Orchid Project: Ex-situ conservation of wild Kenyan Orchids.
<i>Researcher(s):</i>	Prof. John Ochora.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Clinical efficacy of ethnomedicine in patients attending Eden school of natural medicine and clinic.
<i>Researcher(s):</i>	Prof. John Ochora.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Agronomy of yellow oliender (<i>Thevetia peruviana</i>).
<i>Researcher(s):</i>	Prof. John Ochora , Prof. C. Muthuri, M. Makobe.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Domestication of medicinal plants of the 21 st Century and beyond.
<i>Researcher(s):</i>	Prof. Ochora J. , Prof. C. Muthuri, M. Makobe, P. Njenga, P. Maina and J. Kamau.
<i>Status of research:</i>	Ongoing.

1.5 DEPARTMENT OF PHYSICS

<i>Topic:</i>	A Tunable Semiconductor Laser for undergraduate experiments (MSc. Project).
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo , Dr. D.B.O Konditi and Bor Kipkemoi Wesley.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Dr. G. Kihara Rurimo , Ogamba, and Edwin Gituamba.
<i>Researcher(s):</i>	Design and Fabrication of a continuous flow carbon dioxide laser.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Using cellophane to convert a liquid crystal display screen into a three dimensional display.
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo and Mr. Maurice Ogola.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Investigating performance characteristics of the external cavity diode laser (ECDL).
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo and Vincent Onchweri.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Using a cellophane sheet to generate a radially polarized beam.
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo and David Mogere.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Designing and fabricating a confocal Fabry-perot interferometer for determining frequency stability of lasers.
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo and Churchill Saoko.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	An Automatic water level controller for domestic use.
<i>Researcher(s):</i>	Dr. G. Kihara Rurimo and Simon Muriithi Kaguma.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Excitation of 25-35 transition of Lithium Atom by Electron Excitation.
<i>Researcher(s):</i>	Mukesh Kumar , Peter K. Karanja and L.G. Wori Baraja.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Fabrication and Characterization of Nitrogen-doped TiO ₂ solar cells.
<i>Researcher(s):</i>	Simon Waweru.
<i>Status of research:</i>	Completed.
<i>Topic:</i>	Thin Films Photovoltaic Prospects in Solar Energy.
<i>Researcher(s):</i>	Simon Waweru.
<i>Status of research:</i>	Completed.

Topic: Graphical representation of the solutions to Schrodinger equation for the Hydrogen atom.
Researcher(s): **R. Kinyua**, J.K. Owuor, J. A. Muhanji.
Status of research: Completed.

Topic: Assessment of wind energy potential in some selected locations in Kenya.
Researcher(s): **R. Kinyua**, J. N. Kamau.
Status of research: Ongoing.

1.6 DEPARTMENT OF ZOOLOGY

Topic: Biopesticidal properties of plants in Kenya.
Researcher(s): **Dr. Abel, M. Kamweya.**
Status of research: Ongoing.

Topic: Identification of polymorphism in *Rhipicephalus appendiculatus* populations in relation to transmission of East Coast Fever.
Researcher(s): **Dr. H. L. Kutima.**
Status of research: Complete.

Topic: Recombinant expression of Immunosuppressive proteins of the tick vector *Amblyomma variegatum*.
Researcher(s): **Dr. H. L. Kutima.**
Status of research: Complete.

Topic: Risk factors for pneumonia in children less than five years of age, in a rural district hospital of Western Kenya
Researcher(s): **Dr. H. L. Kutima.**
Status of research: Complete.

Topic: Use of biorational Biopesticide to control pests of pigeon pea in Mwea.
Researcher(s): **Dr. H. L. Kutima.**
Status of research: Complete

Topic: The prevalence of Malaria and associated Anemia, and the use of insecticides treated bednets (ITNS) among expectant women during high transmission season in Bungoma – Western Kenya. A hospital based study.
Researchers: **Dr. H. L. Kutima.**
Status of Research: Complete.

Topic: Detection of genetic polymorphisms of sulfadoxine-pyrimethamine (SP) and co-trimoxazole resistance gene markers and association with treatment outcome in Oyugis District, Western Kenya.

- Researchers:** **Dr. H. L. Kutima.**
Status of Research: Ongoing.
- Topic:** Geographical epidemiology of *Trichomonas Vaginalis* among women living in Kisumu Municipality, Kenya.
- Researchers:** **Dr. H. L. Kutima.**
Status of Research: Ongoing.
- Topic:** A study to determine the effect of Zinc Supplementation on the Quantity of life among HIV-1 workers in Kenya.
- Researchers:** **Dr. H. L. Kutima.**
Status of Research: Ongoing.
- Topic:** A study to determine the Prevalence of Soil Transmitted Helminthes Infections in Bondo District, Kenya 2007.
- Researchers:** **Dr. H. L. Kutima.**
Status of Research: Ongoing.
- Topic:** Characterization of the Nymphal Aggregation Pheromone of Malagasy Migratory Locust, *Locusta Migratoria Capito* (Saussure, 1884) and its effects on Adult Maturation and Oviposition.
- Researchers:** **Dr. H. L. Kutima.**
Status of Research: Ongoing.
- Topic:** Queen rearing and colony behaviour of stingless bees (*Apidae; Meliponinae*) in Kakamega forest.
- Researchers:** **Joseph Macharia** and Dr. H. L. Kutima.
Status of Research: Ongoing.
- Topic:** Management of Mango seed weevil *Sternochetus mangiferae* (F) in Kenya by chemical and physical barriers.
- Researchers:** **Samuel Muriuki** and Dr. H. L. Kutima.
Status of Research: Ongoing.
- Topic:** Dry Onion production practices and evaluation of the local germplasm susceptibility to onion thrips.
- Researchers:** **Kibanyu Kimani** and Dr. H. L. Kutima.
Status of Research: Ongoing.
- Topic:** Effects of Nitrogen fertilizer on thrips population dynamics and their management using entomopathogenic nematodes on French beans in Kenya. **Funding from RPE** to support 1 (one) MSc student.
- Researchers:** **Prof. Linus Gitonga.**
Status of Research: Ongoing.
- Topic:** Assessment of natural habitats' influence on pollinators and other beneficial insects in agro-ecosystems; under **FAO funding.**
- Researchers:** **Prof. Linus Gitonga.**
Status of Research: Ongoing.

- Topic:* Assessment of biocontrol potential for potato aphids in different agro-ecosystems: **GOK funding** to support one (1) PhD student.
- Researchers:* **Prof. Linus Gitonga** and Joseph Machangi Maina.
- Status of Research:* Ongoing.
- Topic:* Queen rearing and colony behaviour of stingless bees (Apidae; Meliponinae) in Kakamega forest.
- Researchers:* Joseph Macharia and **Prof. Gitonga L.**
- Status of Research:* Completed.
- Topic:* Management of Mango seed weevil *Sternochetus Mangiferae* (F) in Kenya by chemical and physical Barriers.
- Researchers:* Samuel Muriuki and **Prof. Gitonga L.**
- Status of Research:* Ongoing.
- Topic:* Dry Onion production practices and evaluation of the local germplasm susceptibility to onion thrips.
- Researchers:* Kibanyu Kimani and **Prof. Gitonga L.**
- Status of Research:* Ongoing.
- Topic:* Prospects for biocontrol of the mealy cabbage aphid, *brevicoryne brassicae* l.(homoptera: aphidae) on two varieties of brassica oleracea l. : cabbage and kale using entomopathogenic fungus, *metarhizium anisopliae* (metsch) sorok. biological control of the cabbage aphid using entomopathogenic fungi at JKUAT.
- Researchers:* **Prof. Rosebella O. Maranga.**
- Status of Research:* Complete.
- Topic:* Member of working group on a research project entitled, Research and possible commercialization of Kenyan medicinal plants for the management of HIV/AIDS, malaria and crop pests. 2006 – on-going.
- Researchers:* **Prof. Rosebella O. Maranga.**
- Status of Research:* Complete.
- Topic:* Member of working group on a research project entitled, Research and possible commercialization of Kenyan medicinal plants for the management of HIV/AIDS, malaria and crop pests. 2006- on-going
- Researchers:* **Prof. Rosebella O. Maranga.**
- Status of Research:* Complete.
- Topic:* Interspecific competition between *Xanthopimpla stemmator* Thunberg and *Dentichasmias busseolae* Heinrich (Hymenoptera: Ichneumonidae) pupal parasitoids of *Chilo partellus* (Lepidoptera; Crambidae).
- Researchers:* **Prof. Rosebella O. Maranga.**
- Status of Research:* Complete.

Topic:	The role of trichomes and non-volatile phytochemicals on the Resistance of <i>Lycopersicon</i> species to the tobacco spider mite (<i>Tetranychus evansi</i> Baker and Pritchard).
Researcher(s):	Prof. Rosebella O. Maranga.
Status of research:	Complete.
Topic:	Distribution and habital characterization of Anopheline mosquito larvae in relation to land use in Kegati location, Keumbu Division in Kisii District, Kenya.
Researcher(s):	Prof. Rosebella O. Maranga.
Status of research:	Ongoing.
Topic:	Studies of <i>in vitro</i> responses of fresh clinical isolates of <i>Plasmodium falciparum</i> to locally used anti-malarial herbs from selected regions in Kenya and establishing the toxicity, effective methods of preparation, storage and dispensing of the extract.
Researcher(s):	Prof. Rosebella O. Maranga.
Status of research:	Ongoing.
Topic:	Tomato production practices in Kirinyaga District and assessment of some management options for the manor insect pests.
Researcher(s):	Prof. Rosebella O. Maranga.
Status of research:	Ongoing.
Topic:	Prevalence of the use of ITNs by pregnant women in Bomet District, Kenya.
Researcher(s):	Prof. Rosebella O. Maranga.
Status of research:	Ongoing.
Topic:	Epidemiology and control of parasitic and infectious diseases.
Researcher(s):	Prof. Japheth K. Magambo.
Status of research:	Complete.
Topic:	Epidemiology and control of hydatid disease in Kenya.
Researcher(s):	Prof. Japheth K. Magambo.
Status of research:	Ongoing.
Topic:	Anti-malarial drugs and prevalence of anti-malarial drug resistance.
Researcher(s):	Prof. Japheth K. Magambo.
Status of research:	Ongoing.
Topic:	Malaria vectors, Kano plains, Lake Victoria.
Researcher(s):	Prof. Japheth K. Magambo.
Status of research:	Ongoing.
Topic:	Immunology of <i>P. falciparum</i> .
Researcher(s):	Prof. Japheth K. Magambo.

Status of research: Ongoing.

Topic: Base line studies: HIV/AIDS in JKUAT.

Researcher(s): **Prof. Japheth K. Magambo.**
Status of research: Ongoing.

Topic: Vector ecology and dynamics of malaria transmission in Eritrea, a semiarid ecosystem.

Researcher(s): **Dr. Josephat I. Shililu.**
Status of research: Completed.

Topic: An Ecosystem Approach to Human Health: Integrating malaria control interventions with development strategies in Kenya.

Researcher(s): **Dr. Josephat I. Shililu.**
Status of research: Completed.

Topic: An integrated approach to management of malaria vectors in Mwea division, Kirinyaga district.

Researcher(s): **Dr. Josephat I. Shililu.**
Status of research: Ongoing.

Topic: Microbial control of immature stages of *Anopheles* mosquitoes.

Researcher(s): **Dr. Josephat I. Shililu.**
Status of research: Ongoing.

2. FACULTY OF AGRICULTURE

2.0 DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY



A visit by the Minister for Education made to the FOTEC sales point, JKUAT

- Topic:* Effects of processing on the nutritional and functional properties of Amaranth (*Amaranthus hybridus*) products.
Researcher(s): **Kenji, G.M.**, Mwasaru, M. A., Gikonyo N.K. and Ng'ang'a, M.W.
Status of research: Ongoing.
- Topic:* Technological approaches in enhancing utilization of sorghum and millets in Kenya.
Researcher(s): Onyango C.A., Mwasaru **M.A.**, **Wongo**, L.E., and Ochanda S.O.
Status of research: Ongoing.
- Topic:* Study and improvement of alcoholic beverage Mnazi.
Researcher(s): Njoroge, S. M., **Kutima, P.M.** and Tunje, T.K.
Status of research: Ongoing.
- Topic:* Value addition of termites and may flies.
Researcher(s): Ayieko, M., **Kenji, G.M.**, Tamale, A. and Mayende, T.
Status of research: Ongoing.
- Topic:* Traditional medicines and healing methods among the Embu.
Researcher(s): **Kenji, G.M.**, Gachanja, A., Keriko, G. and Kareru, P.

<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Development of functional foods from medicinal plants.
<i>Researcher(s):</i>	Onyango, A.N.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Community based improved utilization of pearl millet and sorghum varieties grown in arid and semi-arid parts of Eastern Province of Kenya.
<i>Researcher(s):</i>	Onyango, C.A. and Ochieng, J.K.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Evaluation and documentation of indigenous plants used in processing and preservation of livestock products among pastoral communities in Kenya.
<i>Researcher(s):</i>	Onyango, C.A., Mathooko, F.M. , Makobe, M., Maina, J.M. and Mwaura, F.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Field evaluation of seeds soma-clonal variants in search of salinity tolerant sorghum (<i>Sorghum bicolor</i>) for growth in arid and semi-arid regions.
<i>Researcher(s):</i>	Makobe, M., Imbuga, M., Onyango, C.A. , Muthuri, C., Muigai, A. and Kariuki, L.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Application of 1-methylcyclopropene as a tool for extending the post-harvest storage life and quality of horticultural commodities using mango and tissue culture bananas as model fruits.
<i>Researcher(s):</i>	Mathooko, F.M. , Onyango, C.A. and Kahangi, E.M.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Characterization of Dried Herb Powder Utilized for Preservation of Meat by the Pastoral Communities of West Pokot.
<i>Researchers:</i>	Christine A. O., Mathooko, F.M. , Mathara, J.M. and Nyaberi, M.O.
<i>Status: of research</i>	Ongoing.
<i>Topic:</i>	Characterization of Traditionally Processed Goat Milk among Maasai Community in Kajiado District.
<i>Researchers:</i>	Christine A. O., Mathooko, F.M. , Mathara, J.M. and Gakuya, L.W.
<i>Status of research:</i>	Ongoing.
<i>Topic:</i>	Influence of Inorganic Fertilizers (Macro and Micronutrients) on Yield and Quality Attributes of Tissue Culture Banana (<i>Musa Spp</i>) Ratoon Crop
<i>Researchers:</i>	Njoroge, C.K., Mathooko, F.M. , Losenge, T., Omo, and Miriti, J.K.
<i>Status of research:</i>	Ongoing.

- Topic:* Influence of Preharvest Bunch Bagging on the Quality and Postharvest Behaviour of Tissue Culture Banana Fruit.
- Researchers:* **Mathooko, F.M.**, Kahangi, E.M., Njoroge, C.K. and Muchui, M.N.
- Status of research:* Ongoing.
- Topic:* Physiological and Biochemical Responses of Tissue Culture Banana Fruit to Postharvest Treatment with 1-Methylcyclopropene
- Researchers:* **Mathooko, F.M.**, Kahangi, E.M., Njoroge, C.K. and Muchui, M.N.
- Status of research:* Ongoing.
- Topic:* Functional Screening And Characterization Of The Secretomes Associated With Ripening-Related Changes During Pear Fruit Development and Ripening.
- Researcher(s):* Inaba, I., Kubo, Y., Rose, J.K., **Mathooko, F.M.** and Mwaniki, M.W.
- Status of research:* Completed.
- Topics:* Growth Physiology and Quality at Harvest of On-Tree Bagged Mango (*Mangifera indica* L. Cv. Apple) Fruit.
- Researcher(s):* **Mathooko, F.M.**, Onyango, C.A. Kahangi, E.M., Owino, W.O. and Runkua, J.M.
- Status of research:* Completed.
- Topic:* Maturity Indices of Tissue Culture Bananas (*Musa Spp.*) Cv. Williams and Grande Nain.
- Researcher(s):* **Mathooko, F.M.**, Kahangi, E.M., Njoroge, C.K. and Muchui, M.N.
- Status of research:* Completed.
- Topics:* Physiology and Physico-Chemical Characteristics of Mango (*Mangifera indica* L.) Fruit Subjected to Water Stress during Phase I of Growth.
- Researcher(s):* **Mathooko, F.M.**, Onyango, C.A., Kahangi, E.M., Owino, W.O. and Madigu, N.O.
- Status of research:* Completed.
- Topic:* Postharvest processing of irrigated African leafy vegetables for food security.
- Researcher(s):* **Ojijo, N.K.O.**, Nasambu, O., and Kulecho, K.
- Status of research:* Ongoing.
- Topic:* Utilization of yellow oleander oil for the production of biodiesel and edible products.
- Researcher(s):* Keriko, J., **Ojijo, N.K.O.**, and Shitanda, D.
- Status of research:* Ongoing.
- Topics:* Effects of storage and processing on β -carotene content of mangoes.
- Researcher(s):* Muoki, P., Makokha. A.O., **Onyango, C.A.** and Ojijo, N.K.O.

Status of research:

Completed.

Topic:

Effects of storage and cooking processes on the stability of iodine and iron in fortified foods in Kenya.

Researcher(s):

Kenji, G.M., Mwasaru, M. A., Onyango, C.A. and Kamau, E.W

Status of research:

Completed.

2.1 DEPARTMENT OF HORTICULTURE



Prof. Esther Kahangi, a renowned scholar in banana tissue culture

- Topic:* Screening, yield evaluation and genetic finger printing of Drought tolerant Orange-Freshed potato (*Ipomoea batatas* (lam) hybrid clones for East Africa.
- Researcher(s):* Mr. Sammy Agili, Dr. A.B. Nyende, **Dr. K. Ngamau**, Dr. P.W. Masinde and Dr. Regina Kapinga (CIP).
- Status of research:* On-going.
- Topic:* Physiological Responses of grafted tea in response to water stress.
- Researcher(s):* Mr. Johyn Kipkoech Bore, Prof. E.M Kahangi, **Dr. Masinde** and Dr. W. Ngetich (TRF).
- Status of research:* Completed.
- Topic:* Biological control of banana nematodes with fungal endophytes.
- Researcher(s):* M/s Catherine W. Machungo, Dr. Turoop Lozenge and **Prof. E. M. Kahangi**.
- Status of research:* On-going.
- Topic:* Adapting spraying regime to late resistant potato varieties and testing for metalaxyl tolerance.
- Researcher(s):* M/s Grace Ngatia, Dr. T. Lozenge, **Dr. K. Ngamau** and Ir. Peter Gildemacher (CIP)
- Status of research:* Completed.
- Topic:* Effect of Arbuscular Mycorrhizal (AM) inoculation on the growth and post trasplant performance of selected tropical fruit seedlings.
- Researcher(s):* Mr. Daniel K. Chebet, Dr. Rutto, **Prof. L.S. Wamocho** and Dr. W. Kariuki.
- Status of research:* On-going.

- Topic:** Factors affecting development of colour on the florets of tuberose (*Polianthis tuberosa* Linn).
- Researcher(s):** Mrs Alice N. Muriithi, **Prof. L.S. Wamocho** and J.B. Njoroge.
- Status of research:** On-going.
- Topic:** Effect of pesticide application on pollinator activity and yield of cucurbita moschata (bhutternut).
- Researcher(s):** M/s Nanyondo Solomy, **Dr. J. Wesonga**, Dr. G. Njoroge (Botany Dept.) and Dr. F. Wanzala.
- Status of research:** On-going.
- Topic:** Response of local sweet potato varieties to virus infection.
- Researcher(s):** M/s Grace Mumbi Njeru, **Prof. S.G. Agong**, Dr. M. Ateka and Dr. P. W Masinde
- Status of research:** Completed.
- Topic:** Genetic characterization of macadamia germplasm using simple sequence repeats (SSRs), its multiplication and conservation in Kenya.
- Researcher(s):** M/s Lucy Gitonga, **Prof. E. Kahangi**, Dr. A. Muigai and Dr. Kamau Ngamau.
- Status of research:** On-going.
- Topic:** Biological performance, response and population dynamics of *Tetranychus evansi* (Baker and Pritchard) as influenced by different African nightshade (*Solanum spp.*) species
- Researcher(s):** M/s Lucy K. Murungi, B. Nyende, Dr. P. Masinde, **Dr. J.M. Wesonga** and Dr. M.A. Knapp, ICIPE
- Status of research:** On-going.
- Topic:** On-farm evaluation of the effect of positive selection on the yield of Irish potato (*Solanum tuberosum L.*) under conditions of disease prevalence
- Researcher(s):** M/s Mundia Pauline W., D. L. Turoop and P. Gildemacher (CIP), **Prof. E.M Kahangi**.
- Status of research:** On-going.
- Topic:** Potential for utilization of entomothogenic beuveria bassiana for control of banana weevils (*Cosmopolites sordidus*)
- Researcher(s):** M/s Carolyne Anaye Omukoka, **Prof. E.M. Kahangi**, Prof. L.S. Wamocho and Dr. J.M Wesonga
- Status of research:** On-going.
- Topic:** Isolation and Screening of endophytic fungi: Fusarium oxysporum for biological control of banana nematodes in tissue culture bananas (*Musa spp*)
- Researcher(s):** Mr. P. Mwaura, **Prof. E.M. Kahangi**, Dr. Turoop Losenge and Dr. Thomas Dubois.
- Status of research:** Completed.

- Topic:** Selection for yield and high oil content in macadamia hybrids using conventional and molecular tools.
- Researcher(s):** Mr. Antony Nyaga, Dr. B. Nyende and **Prof. K. Ngamau.**
- Status of research:** On-going.
- Topic:** The ecology, distribution and population structure of *Phytophthora cinnamomi* causing root rot and stem canker of Macadamia in Kenya.
- Researcher(s):** M/s Jesca N. Mbaka, **Prof. L.S Wamocho** and Dr. Turoop
- Status of research:** On-going.
- Topic:** Screening, evaluation and selection for drought resistant orange fresh sweet potato (*Ipomoea batatas*)
- Researcher(s):** Mr. Moses M. Wamalwa, Dr B. Nyende and **Dr. P.W. Masinde.**
- Status of research:** On-going.
- Topic:** Mass propagation of bamboo and adaptability to Graywater gardens
- Researcher(s):** **Mr. Murage Hunja**, Prof. Chin Ong (ICRAF), Dr. K. Ngamau and Dr. Catherine Muthuri (Botany Dept.).
- Status of research:** On-going.
- Topic:** Evaluation of Soybean and upland rice varieties.
- Researcher(s):** **Mr. Hunja Murage** /Dr. Peter Masinde.
- Status of research:** On-going
- Topic:** Distribution, Characterisation and Chemical control of *Phytophthora spp.* causing citrus gummosis in Kenya.
- Researcher(s):** Mr. Mounde Leodard Gichana, **Dr. E.M. Ateka**, Dr. A. Kihurani and Dr. Lisike Wasilwa (KARI).
- Status of research:** On-going.
- Topic:** Screening and Molecular Analysis of Somaclonal Variants and Mutants of Sorghum (*Sorghum bicolor (L) Moench*) for salinity tolerance.
- Researcher(s):** M/s Wambua Judy Mwende, Dr. A.B. Nyende and **Dr. Njue Mugai.**
- Status of research:** On-going.
- Topic:** In-vitro propagation and morphological characterisation of Kenyan yams (*Dioscorea spp.*).
- Researcher(s):** Mwirigi Peter N., **Prof. E.M. Kahangi**, Dr. A.B. Nyende and Dr. M. Mamati.
- Status of research:** On-going.
- Topic:** Studies on the Distribution, Diversity and conservation of Yam species in Kenya.
- Researcher(s):** Mr. Muthamia, Zachary Kithinji, **Dr. A.B. Nyende**, Dr. M. Mamati and Dr. Wangai (KARIO)
- Status of research:** On-going.

- Topic:* Banana Bunchy Top Virus (HBBV) constraint in Central Africa (Burundi, DRC Congo and Rwanda)
- Researcher(s):* **Mr. Cerestine Niyongere.**
- Status of research:* On-going.
-
- Topic:* Commercial and Industrial development of papaya.
- Researcher(s):* **Dr. Freda Wanzala**, Prof. L.S. Wamocho and Dr. E.M. Ateka.
- Status of research:* On-going.
-
- Topic:* Use of Capillarey hicics for irrigation in intensive horticulture production in Kenya.
- Researcher(s):* **Dr. Wesonga J.M.**, Dr. Masinde P., Mr. Ombwara F. And Dr. Home Patrick.
- Status of research:* On-going.
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- Topic:* Use of Bawlo viruses to control lepidoptera pests
- Researcher(s):* Ms Edna Muthamia, **Dr. Wesonga J.M.** and Dr. Nicholai van Beek.
- Status of research:* On-going.
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- Topic:* Calibration of lime requirement tests for acid soils of Kenya.
- Researcher(s):* **Dr. Njue Mugai**, Mr. P.G. Kareru, Dr. A.B. Nyende and W.N. Karugu.
- Status of research:* On-going.

3. FACULTY OF ENGINEERING

3.0 DEPARTMENT OF CIVIL ENGINEERING



Tricycle product for physically challenged persons done by engineering workshop

Topic: Use of plant material as reinforcement for concrete.
Researcher(s): **Prof. R.N. Mutuku.**
Status of research: On going.

Topic: Development of local sustainable construction materials and technologies for buildings and roads infrastructure.
Researcher(s): **Prof. W. Oyawa.**
Status of research: On going.

Topic: Modelling of Lake Naivasha water quality parameters (continuing research funded by AICAD).
Researcher(s): **Dr. G. Thumbi.**
Status of research: On going.

Topic: Flood Management in Lake Basin.
Researcher(s): **Dr. M.O. Nyadawa.**
Status of research: On going.

Topic: Rural road surfacing materials research.
Researcher(s): **Dr. Z. Abiero Gariy.**
Status of research: On going.

<i>Topic:</i>	Construction and Maintenance of rural access roads in Kenya using soil bags.
<i>Researcher(s):</i>	Dr. Too.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Mangrove poles as reinforcement for concrete beams
<i>Researcher(s):</i>	Mr. G. Manguriu.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Use of Modified Bitumen in roads
<i>Researcher(s):</i>	Mr. S. Mulei.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Research on the LOST Science of the Pyramids
<i>Researcher(s):</i>	Mr. K. Kirerah.
<i>Status of research:</i>	On going.
<i>Topic:</i>	On-going research on engineering use of big diameter bamboo poles in lightweight concrete slabs.
<i>Researcher(s):</i>	Mr. L. Njuki.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Reuse of sewage effluent for Irrigation practice
<i>Researcher(s):</i>	Mr. K. Matoke
<i>Status of research:</i>	On going.
<i>Topic:</i>	Development of household water filter.
<i>Researcher(s):</i>	Mr. H. M. Mutua.
<i>Status of research:</i>	On going.
<i>Topic:</i>	1. Innovative uses of quarry dust. 2. Stone and sand mining in Machakos Dist. 3. Design of a portable stone dressing machine in collaboration with Electrical & Mechanical Eng. Departments (At the Design Stage).
<i>Researcher(s):</i>	Mr. P. Mulu.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Production of concrete plasticizers.
<i>Researcher(s):</i>	Mr. C. Kabubo.
<i>Status of research:</i>	On going.
<i>Topic:</i>	Utilization of quarry dust in concrete as an alternative to river sand.
<i>Researcher(s):</i>	Mr. T. Musiomi.
<i>Status of research:</i>	On going.

3.1 DEPARTMENT OF MECHANICAL ENGINEERING



Grinding mill done by mechanical engineering

- Topic:* Control of Environmental Pollution by CO₂ Using a Liquid Absorber.
Researcher(s): **Dr. Eng. Karanja Kibicho** and Hiram Muriithi Ndiritu.
Status of research: On going.
- Topic:* Stress Characterization in Thick-Walled Cylinders with Cross Bores introduced after Autofrettage.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: On going.
- Topic:* Transactions of ASME, Journal of Fluids Engineering.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: On going.
- Topic:* The Economics of the Steel Industry: A Case Study of Kenya
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: On going.
- Topic:* Comparison of Finite Element Metal Compaction Models.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: On going.
- Topic:* Study on Aluminium Material Flow and Economic Dimensions in Kenya
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: On going.

- Topic:* Modeling of Heat Flow, Precipitate Formation and Grain Growth in the Heat Affected Zone of Aluminum Alloy Weldments.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: Completed.
- Topic:* Development of a Process of Recycling Rubber Chips into Composite Elastomers.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: Completed.
- Topic:* An Intrinsic Dislocation – Finite Element Formulation.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: Completed.
- Topic:* Theoretical Modeling and Experimental Study of the Vibrations of a Tractor Gearbox.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: Completed.
- Topic:* Analysis of the Dynamic Behaviour of an Excavator due to Interacting Mechanical and Hydarulic Dynamics.
Researcher(s): **Dr. Eng. John M. Kihiu.**
Status of research: Completed.

3.2 DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

- Topic:* 1. Numerical Modelling and Implementation of Microwave Probes for Detection of malignant tumours.
2. Theoretical and Experimental investigations on Problems of Electromagnetic Coupling and Compatibility arising in Shielded Enclosures, such as circuit boards, cavities, with Apertures of arbitrary shape.
- Researcher(s):* **Dr D. B. O. Konditi.**
Status of research: On-going.
- Topic:* Portable refreshable Intelligent Electronic Braille Reader
Researcher(s): **Dr. D. B. O. Konditi, Daphin Juma.**
Status of research: On-going.
- Topic:* Hybrid Moment/Finite Element formulation for Radiation problem through inhomogeneously filled Cavities of Arbitrary Shape in Thick Conducting Screens and Waveguides.
Researcher(s): Dr. N. O. Abungu, **Dr. D. B. O Konditi** and *Prof. A. V. Otieno.
Status of research: Completed.
- Topic:* Formulation of Radiation Characteristics of an Aperture of Arbitrary shape coupling Microstrip Patch Antenna by a Hybrid FEM/EFIE Technique
Researcher(s): P. L. Kibet, **Dr. D. B. O. Konditi** and Dr. S. Musyoki
Status of research: Completed
- Topic:* Design and Construction of Rectangular Microstrip Antennas.
Researcher(s): Frankline Muriuki Manene, **Dr. D. B. O. Konditi** and C. Wekesa.
Status of research: Completed.
- Topic:* Design and Construction of a microstrip-patch antenna array with regular-shaped apertures based on FDTD-MFIE Formulations.
Researcher(s): E. K. Kipyegon and **Dr. D. B. O. Konditi** and V. M. Dharmadhikary.
Status of research: Completed.
- Topic:* Microwave Characterization of Soil Moisture and Surface Roughness: Kenya Region as a Case Study.
Researcher(s): M. O. Omae, **Dr. D. B. O. Konditi** and Dr H A Ouma.
Status of research: Completed.
- Topic:* 1) Non-utility generation: an analysis of its impact on the Kenya Power System.
2) Industrial Loading Modeling.
3) Collaboration with KPLC on Issues affecting the Kenyan Power.
Researcher(s): **A. O. Akumu**, P. M. Anangi.
Status of research: On-going.
- Topics:* 1) Books on "Visual Basic 6 Programming" (under publication by JKUAT).
2) Development of a SMS based memo server.
Researcher(s): **Dr. S. Musyoki.**
Status of Researcher: On-going.
- Topics:* FORTEC Machines.

Researcher: **Prof. S. Muhoho**, Dr. L. M. Ngoo. Mr. G G Kidegho, Mr. D. Omondi.
Status of Research: On-going.
Topics: Power system voltage stability- electrical load modeling using Fuzzy logic and neaural networks

Researcher: **C. M. Mureithi.**
Status of Research: On-going.
Topics: Development of interactive electronic teaching and learning materials for bridging course in mathematics.

Researcher: **Prof. S.M. Kangethe.**
Status of Research: On-going.
Topics: A study on non-utility generation: analysis of its impact on the Kenyan power system.

Researcher: **P. M. Anangi.**
Status of Research: On-going.
Topics: Application SOM in health
Researcher(s): P. K. Kihato and Dr. J. N. Nderu
Status of Researcher: On-going.

3. 3 DEPARTMENT OF GEOSPATIAL INFORMATION SYSTEMS



Motorised bicycle, a product of engineering workshop

Topics: Integrating GIS and Remote Sensing in Mapping and Management of Water Resources.

Researcher(s): **Dr. Waithaka H. E.**, M. Kasahara, C. M. Kamamia, Waore E. N. and Kapoi K.

Status of Researcher: Ongoing.

Topics: Flood Vulnerability and risk assessment using GIS and Remote Sensing.

Researcher: **Dr. Waithaka H. E.**, M. Kasahara, C. M. Kamamia, Waore E. N. and Kapoi K.

Status of Research: Ongoing.

Topics: Crustal Deformations across the East African. Rift Valley System inferred from GPS.

Researcher: **Dr. Waithaka H. E.**, M. Kasahara, C. M. Kamamia, Waore E. N. and Kapoi K.

Status of Research: Ongoing.

Topics: Use of open-source resources for community-based GIS in developing countries.

Researcher: **Dr. Moses Murimi Ngigi.**

Status of Research: Ongoing.

Topics: Applications of GIS/Remote Sensing in tourism promotion.

Researcher: **Charles B. Wasomi.**

Status of Research: Ongoing.

<i>Topics:</i>	Minimum and maximum values versus conventional average values in linear spectral unmixing.
<i>Researcher(s)</i>	Dr. Thomas. G. Ngigi
<i>Status of Researcher:</i>	Ongoing.
<i>Topics:</i>	Overcoming unknown-mixture-model problem in spectral unmixing: percentages normalisation curves.
<i>Researcher:</i>	Dr. Thomas. G. Ngigi
<i>Status of Research:</i>	Ongoing.
<i>Topics:</i>	Mix-unmix Classifier: spatial distribution of end-members
<i>Researcher:</i>	Dr. Thomas. G. Ngigi
<i>Status of Research:</i>	Ongoing.
<i>Topics:</i>	Towards the <i>development of a functional GIS for JKUAT.</i>
<i>Researcher:</i>	Dr. Gachari M.K and Gichuru Geoffrey M.
<i>Status of Research:</i>	Ongoing.
<i>Topics:</i>	Geoid modelling in Kenya and its practical applications.
<i>Researcher:</i>	Dr. Gachari M.K and Odera P.A.
<i>Status of Research:</i>	Ongoing.

3.4 DEPARTMENT OF BIOMECHANICAL AND ENVIRONMENTAL ENGINEERING



Honey extractor, a product of BEED

- Topic:* Application of genetic algorithm in the optimization of solar tent fish dryer.
Researcher(s): Kituu M., **Shitanda D.** Kanali, C. L., Mailutha J. T and Njoroge G. N.
Status of research: Ongoing.
- Topic:* Development of baobab seeds milling machine.
Researcher(s): **D. Shitanda**, D. M. Mburu, I. K. Kulecho.
Status of research: Ongoing.
- Topic:* Modeling and Design of Modified Atmosphere Packaging for Passion Fruit.
Researcher(s): **D. Shitanda**, Mr. Wawire.
Status of research: Ongoing.
- Topic:* Biodiesel Characteristics of Oils from Indigenous Oilseeds.
Researcher(s): D. Shitanda, J. Keriko, A. Anyangu.
Status of research: Ongoing.
- Topic:* Promotion of Fish Drying Technology in Lake Victoria Basin.
Researcher(s): **D. Shitanda**, V.C. Silayo, J. Bongyereire, P. Odote
Status of research: Ongoing.
- Topic:* Use of indigenous vegetable oils as diesel engine lubricants.
Researcher(s): **D. Shitanda**, A. Anyangu.
Status of research: Ongoing.

- Topic:* Dying Effect on the Quality and Processing Characteristics of African *Mondia Whytei*.
Researcher(s): **D. Shitanda**, M. Mukonyi.
Status of research: Ongoing.
- Topic:* Integrated Management of *Prosopis Chilensis* in ASAL Areas of Kenya.
Researcher(s): **D. Shitanda**, M. Kabaka.
Status of research: Ongoing.
- Topic:* Quality Enhancement of Bananas and Mangoes Grown in Makueni District.
Researcher(s): **D. Shitanda**.
Status of research: Ongoing.
- Topic:* Development of alternative irrigation technologies for higher water, labour and nutrient-use efficiency in water scarce areas of Kenya.
Researcher(s): **Gathenya J. M.**, Home P. G., Ngamau, C. N. Ritho C. N. and Munyiri I. G.
Status of research: Ongoing.
- Topic:* Feasibility Assessment for Naivasha – Malewa Payments for Watershed Services: Hydrological Assessment.
Researcher(s): **Gathenya J. M.**, Home P. G., Sang, J. Mutie S., Ogweno L. P.
Status of research: Completed.
- Topic:* BNWPP Supported study on hydrological services in Sasumua watershed.
Researcher(s): Swallow, B. (ICRAF), **Gathenya J. M.** (JKUAT), and other collaborators from NEMA and KARI.
Status of research: Ongoing.
- Topic:* Application of geo-information for flood forecasting in Lake Victoria basin, Kenya.
Researcher(s): Gaya C., Gachari M. K. and **Gathenya J. M.**
Status of research: Ongoing.
- Topic:* Development of a solar-charcoal cooler for storage of farm produce in marginal areas of Kenya.
Researcher(s): **Makanga J. T.**, Njoroge C. K.
Status of research: Ongoing.
- Topic:* Optimal use of different woods and wood products in the smoking of African and Marine Catfish from Kipini and Tana Delta areas of Kenya as a measure for conserving Aquatic resources.
Researcher(s): **D. Shitanda** (JKUAT), P. Odote (KMFRI).
Status of research: Ongoing.
- Topic:* Bridging information gaps between researchers, extension agents and farmers on water harvesting techniques for improved fruits production in Kenya's dry lands.
Researcher(s): **J. B. Kungu**, D. M. Mburu, G. Bunyi.
Status of research: Ongoing.
- Topic:* Evaluation of capillary wicks for use in irrigation for intensive horticultural crop production in Kenya.
Researcher(s): J. B. Wesonga, P. W. Masinde, F. K. Ombwara, **P. G. Home**.
Status of research: Ongoing..
- Topic:* Application of genetic algorithm in the optimization of solar tent fish dryer.

Researcher(s):	Kituu M., Shitanda, D. Kanali, C. L., Mailutha J. T and Njoroge, G. N.
Status of research:	Ongoing.
Topic:	Development of baobab seeds milling machine.
Researcher(s):	D. Shitanda , D. M. Mburu, I. K. Kulecho
Status of research:	Ongoing.
Topic:	Modeling and Design of Modified Atmosphere Packaging for Passion Fruit.
Researcher(s):	F. M. Mathooko, D. Shitanda , M. Wawire.
Status of research:	Ongoing
Topic:	Biodiesel Characteristics of Oils from Indigenous Oilseeds.
Researcher(s):	D. Shitanda , J. Keriko, A. Anyangu.
Status of research:	Ongoing.
Topic:	Promotion of Fish Drying Technology in Lake Victoria Basin.
Researcher(s):	D. Shitanda , V.C. Silayo, J. Bongyereire, P. Odote
Status of research:	Ongoing.
Topic:	Use of indigenous vegetable oils as diesel engine lubricants.
Researcher(s):	D. Shitanda , A. Anyangu.
Status of research:	Ongoing.
Topic:	Dying Effect on the Quality and Processing Characteristics of African <i>Mondia Whytei</i> .
Researcher(s):	D. Shitanda , M. Mukonyi.
Status of research:	Ongoing
Topic:	Integrated Management of <i>Prosopis Chilensis</i> in ASAL Areas of Kenya.
Researcher(s):	D. Shitanda , M. Kabaka.
Status of research:	Ongoing.
Topic:	Quality Enhancement of Bananas and Mangoes Grown in Makueni District.
Researcher(s):	D. Shitanda .
Status of research:	Ongoing.
Topic:	Development of alternative irrigation technologies for higher water, labour and nutrient-use efficiency in water scarce areas of Kenya.
Researcher(s):	Gathenya, J. M. Home, P. G., Ngamau, C. N. Ritho, C. N. and Munyiri, I. G..
Status of research:	Ongoing.
Topic:	Feasibility Assessment for Naivasha – Malewa Payments for Watershed Services: Hydrological Assessment.
Researcher(s):	Gathenya, J. M., Home P. G., Sang, J. Mutie, S., Ogweno, L. P.
Status of research:	Completed.
Topic:	BNWPP Supported study on hydrological services in Sasumua watershed.
Researcher(s):	Swallow, B. (ICRAF), Gathenya, J. M. (JKUAT), and other collaborators from NEMA and KARI.
Status of research:	Ongoing.
Topic:	Application of geo-information for flood forecasting in Lake Victoria basin, Kenya.
Researcher(s):	Gaya, C., Gachari, M. K. and Gathenya, J. M.
Status of research:	Ongoing.

- Topic:* Development of a solar-charcoal cooler for storage of farm produce in marginal areas of Kenya.
- Researcher(s):* **Makanga, J. T**, Njoroge, C. K.
- Status of research:* Ongoing.
- Topic:* Optimal use of different woods and wood products in the smoking of African and Marine Catfish from Kipini and Tana Delta areas of Kenya as a measure for conserving Aquatic resources.
- Researcher(s):* **D. Shitanda** (JKUAT), P. Odote (KMFRI).
- Status of research:* Ongoing.
- Topic:* Bridging information gaps between researchers, extension agents and farmers on water harvesting techniques for improved fruits production in Kenya's dry lands.
- Researcher(s):* J. B. Kungu, **D. M. Mburu**, G. Bunyi
- Status of research:* Ongoing.
- Topic:* Evaluation of capillary wicks for use in irrigation for intensive horticultural crop production in Kenya
- Researcher(s):* J. B. Wesonga, P. W. Masinde, F. K. Ombwara, **P. G. Home**.
- Status of research:* Ongoing.
- Topic:* Improving decision-making processes through climate change scenario generation in the Kano Plains of Western Kenya. ACCCA Project Funded by IDRC, ENDA.
- Researcher(s):* P. Sahota, J. M. Gathenya, **P. G. Home**, M. Kavoi.
- Status of research:* Ongoing.

4. SCHOOL OF ARCHITECTURE AND BUILDING SCIENCE

4.0 DEPARTMENT OF CONSTRUCTION MANAGEMENT



Architectural model for hall seven

Topics: Communicating the Value(s) of Interaction Design in Place Branding.

Researcher: **Omunga, P.M.**

Status of Research: On-going.

Topics: Campus Branding Project.

Researcher: **Omunga, P.M.**

Status of Research: On-going.

Topics: The application of decision-theoretic methodologies in architectural decision making.

Researcher: **Wairimu Mahinda.**

Status of Research: On-going.

Topics: Enhancing traveler's safety

Researcher: **Eng. Maina Kiambigi.**

Status of Research: Completed.

Topics: A system dynamics model of construction output in Kenya, PhD

Researcher: **Mbiti, T.K.P.**

Status of Research: Completed.

4.1 DEPARTMENT OF ARCHITECTURE

Topics: Community Perception and Conservation.
Researcher: **Francis Mburu**, Benard Mugwima, Alfayo Makdii.
Status of Research: Ongoing.

Topics: Water for Urban Aesthetics: A strategy for City Regeneration.
Researcher: **Noel J. O. Okello.**
Status of Research: Ongoing.

Topics: Documentation of the works of Architect James Kimathi.
Researcher: Dr. F. Mburu, **Dr. S.Kibue.**
Status of Research: Ongoing.

4.2 DEPARTMENT OF LAND ARCHITECTURE

<i>Topics:</i>	Plant ID in JKUAT.
<i>Researcher:</i>	Mr. Samuel Kigundu.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	Spatial planning & Environmental Quality of residential Neighbourhoods in the City of Nairobi.
<i>Researcher:</i>	Mr. Micah Makworo.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	Study on pedestrian patterns on Aga Khan Walk with NCBD.
<i>Researcher:</i>	Mr. F.K. Ngunjiri.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	The influence of streetscape on the informal market.
<i>Researcher:</i>	Ms. Esther K. Mutiso.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	Planning of street vendors in Nairobi CBD Use of Water in thermal regulation.
<i>Researcher:</i>	Ms. Esther K. Mutiso.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	Research in elaboration with KEFRI on Bamboo production and utilization in construction.
<i>Researcher:</i>	Mr. Gathogo Githatu
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	The cemetery as a Garden of rest.
<i>Researcher:</i>	Mr. Paul Aloyo.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	The Impact of the physical environment on learning outcomes.
<i>Researcher:</i>	Mr. Paul Aloyo.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	User perception of land use activities and forms along river corridors.
<i>Researcher:</i>	Mrs. Josephine W. Muchogu.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	Plant Identification JKUAT.
<i>Researcher:</i>	Prof. P. G. Ngunjiri.
<i>Status of Research:</i>	On-going.
<i>Topics:</i>	PhD studies (Urban Development in Nairobi)
<i>Researcher:</i>	Mr. Bernard M. Njuguna.
<i>Status of Research:</i>	On-going.

Topics: **Mr. Bernard M. Njuguna.**
Researcher: Conservation of the metropolis beyond vision 2030.
Status of Research: On-going.

Topics: Compendium of historical Nairobi.
Researcher: **Mr. Bernard M. Njuguna.**
Status of Research: On-going.

5. INSTITUTE OF BIOTECHNOLOGY RESEARCH



Tissue culture products, a banana demonstration farm

Topic: Establishing a protocol for regenerating Aloe Vera with high medicinal value.

Researcher(s): Dr. A. B. Nyende, **Dr. Justus Onguso** and Jane Rugetho.

Status of research: Ongoing.

Topic: Establishing a protocol for regenerating commercial rose varieties.

Researcher(s): **Dr. A. B. Nyende** and Cecilia Mweu.

Status of research: Ongoing.

Topic: Establishing a protocol for regenerating Biodiesel rich Jatropha Curcas varieties.

Researcher(s): **Dr. A. B. Nyende**, Cecilia Mweu and Jane Rugetho.

Status of research: Ongoing.

Topic: Establishing a protocol for regenerating high yielding Tea varieties

Researcher(s): **Dr. A. B. Nyende** and Cecilia Mweu

Status of research: Ongoing.

Topic: Establishing protocols for regenerating endemic and endangered useful plants of Tharaka.
Researcher(s): **Dr. A. B. Nyende** and Cecilia Mweu.
Status of research: Ongoing.

Topic: Innovation of a machine for prequites production for fuel
Researcher(s): **Ben Momanyi** and Ann Kelly.
Status of research: Completed.

Topic: Production of organic pesticides.
Researcher(s): **Ben Momanyi** and Ann Kelly
Status of research: Ongoing

Topic: Establishing a protocol for regenerating South African Eucalyptus timber production.
Researcher(s): **Jane Rugetho**
Status of research: Ongoing.

6. INSTITUTE OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY



A computer assembly demonstration workshop

- Topics:* Discrete Event Simulation Models.
Researchers: **Dr. Waweru Mwangi.**
Status: Ongoing.
- Topics:* DELOS Network of Excellence on Digital Libraries.
Researchers: **Dr. Stephen Kimani.**
Status: Completed.
- Topics:* Computer Science Resources for Kenyan University Students (CORPUS).
Researchers: **Dr. Stephen Kimani, S. and Gachui, N. A.**
Status: Ongoing.
- Topics:* GSR Computer Studies for form 1 & 2 Revision Guide
Researchers: **Geoffrey Chemwa.**
Status: Completed.

Topics: Accounting for culture in the design of Information Systems.
Researchers: **L. M. Mengo.**
Status: Ongoing.

Topics: Information Technology security in small and medium Enterprises.
Researcher: **Kimwele M. W.**
Status: Ongoing.

Topics: Investigation into Application of Affective Computing in Human Resource Management Decisions.
Researcher: **Joseph Orero.**
Status: Ongoing.

Topics: Research on crime mapping techniques using Application Programming Interfaces in the Central Business District.
Researchers: **Ann Kibe.**
Status: Ongoing.

7. INSTITUTE OF ENERGY AND ENVIRONMENTAL TECHNOLOGY (IET)

- Topic:* Assessment of Pollution Status of Lake Naivasha and Potential for utilization of Geothermal Fluids for Irrigation and Solution Mining”
- Researcher:* **Paul M. Njogu.**
- Status of Research:* Ongoing.
- Topic:* The study of Community wildlife conservancies and conservation areas in the management of resource Conflicts in Kenya using G.I.S and Strategic Environmental Assessment (SEA). Registered by graduate School JKUAT.
- Researchers:* **Margaret Gichui’s.**
- Status of Research:* Ongoing.
- Topic:* Investigating institutional, policy and project financing barriers impeding clean development mechanism implementation in Kenya.
- Researchers:* **Mutevu Michael Mutie.**
- Status of Research:* Ongoing.
- Topics:* Investigations on Implementation and Compliance of environmental Management Systems By Companies by Companies in Kenya.
- Researchers:* **Victor Mutua**
- Status of Research:* Ongoing.
- Topic:* Construction Sand Packaging project.
- Researcher:* **Dr. Jackson John Kitetu.**
- Status of Research:* Ongoing.
- Topic:* Bottled Drinking Water Project.
- Researcher:* **Dr. Jackson John Kitetu.**
- Status of Research:* Ongoing.
- Topic:* Environmental Assessment and Development Policy Centre Project.
- Researcher:* **Dr. Jackson John Kitetu.**
- Status of Research:* Ongoing.
- Topic:* An evaluation of the Effectiveness of the Secondary School Geography in Environmental Education Instruction in Nakuru District.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Joseph Mworira Wamutitu.
- Status of Research:* Ongoing.

- Topic:* Linking land-use, land cover, degradation status and sediment dynamics of rivers Nyando and Sondu Miriu basins of Lake Victoria.
- Researcher:* **Dr. Jackson John Kitetu** and Abuom Paul Otieno.
- Status of Research:* Ongoing.
- Topic:* Evaluation of Environmental Policy and Law making processes on sustainable arid and semi-arid lands management in Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Charles Lugo.
- Status of Research:* Ongoing.
- Topic:* Assessment of Environmental Impacts on Constructing Subsurface Dams across ephemeral Riverbeds form provision of portable water in Kitui and Mwingi Districts, Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and **Cyrus Muthui Kilonzi**.
- Status of Research:* Ongoing.
- Topic:* Evaluation of Constraints and Challenges of implementing the Poverty Eradication Policy in North Eastern Province (NEP), in Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Mohamed Elmi Issak.
- Status of Research:* Ongoing.
- Topic:* A strategy for an alternative use of polythene waste in Nakuru Municipality in Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. B.H. K. Karanja.
- Status of Research:* Completed.
- Topic:* Social Forestry Practices in Moiben Division, Uasin Gishu District, Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and **Mr. Heeran M. Mutuku**
- Status of Research:* Completed.
- Topic:* Algal and Physico-chemical variations in Lake Baringo, Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. C. Olilo's.
- Status of Research:* Completed.
- Topic:* An analysis of media coverage of environmental issues in Kenya: a case study of the Kenyan press.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Martin W. Barasa.
- Status of Research:* Ongoing.
- Topic:* Environmental Impacts of Alternate Ship Loading Facilities for Titanium Mining in Kwale, Kenya: A cost-benefit analysis approach.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Edward Juma Masakha.
- Status of Research:* Ongoing.

- Topic:* Determination of knowledge, attitude and practice of environmental education in secondary schools in Nakuru Municipality.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Kamau.
- Status of Research:* Ongoing.
- Topic:* Role of School Agriculture in Community Flood Disaster Preparedness: The Case of Budalangi Division, Busia, Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Mr. Kombo, J.B.
- Status of Research:* Ongoing.
- Topic:* Assessment of the impact caused by Pan African Paper Mills on Agricultural production in Webuye Division –Kenya.
- Researcher:* **Dr. Jackson John Kitetu** and Zipporah N.I. Simiyu.
- Status of Research:* Ongoing.
- Topic:* Evaluation of Environmental Assessment Policy in Kenya Since 1999. The Case Study of Agricultural Sector in Nakuru District.
- Researcher:* **Dr. Jackson John Kitetu** and Awinda Danice Otieno.
- Status of Research:* Ongoing.

8. INFORMATION TECHNOLOGY CENTER

- Topic:* An evolutionary algorithm approach to course timetabling:
A case study of JKUAT IT Centre
- Researcher:* **W. H. Kaguongo**, R. W. Mwangi, S. Kimani.
- Status of Research:* Completed.
- Topic:* U.H.F broadband television antenna design.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.
- Topic:* Audio amplifiers.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.
- Topic:* Creation of stable and secure wireless networks.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.
- Topic:* Ear Fatigue Reduction In The Design Of Audio Amplifiers.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.
- Topic:* Ear Fatigue.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.
- Topic:* Ear Fatigue Reduction In The Design Of Amplifier Dual Rail Power Supply.
- Researcher:* **W. H. Kaguongo.**
- Status of Research:* Completed.

9. INSTITUTE OF TROPICAL MEDICINE AND INFECTIOUS DISEASES



Lab.session at medical microbiology labs

Topic: The use of Tissue Culture (TC) bananas for improved food security among people living with Aids in Karachuonyo District, Western Kenya.

Researcher: **Ng'ang'a Z. W.**

Status of Research: Ongoing.

Topic: Controlling Rift Valley Fever Virus using RNA silencing.

Researcher: **Ongus J. W.**

Status of Research: Ongoing.

Topic: Aquaculture dynamics in selected reservoirs of Kenyan Highlands and its effects from feeder streams.

Researcher: **Mwachiro E. C.**

Status of Research: Ongoing.

Topic: Characterization of road traffic accidents at the Kenyatta National Hospital.

Researcher: **Opondo E.**

Status of Research: Ongoing.

10. SCHOOL OF HUMAN RESOURCE DEVELOPMENT (SHRD)

10.1 DEPARTMENT OF ENTREPRENEURSHIP AND PROCUREMENT

Topic: Health and Safety Factors in JKUAT.

Researcher: **Gakure, R.W** and Inгаа, D.

Status of Research: On-going.

Topic: Factors Hindering the Sustainability of SME Owners in Kandara Community Avocado Producer Groups: A Case of USAID Community Funded Avocado Program in Kandara, Maragua District.

Researcher: **Gakure. R. W** and Kanyakiri, J.

Status of Research: On-going.

Topic: Factor Influencing Health And Safety Of Employees In Cut Flower Firms.

Researcher: **Gakure, R. W.** and Mugambi, A.

Status of Research: On-going.

10.2 DEPARTMENT OF SOCIAL SCIENCES AND HUMANITIES

- Topic:* Impact of Private Institutions on Small-scale farmers. Development Studies.
Researcher: **Mrs. Florence N. Ondieki-Mwaura.**
Status of Research: On-going.
- Topic:* The case of Kenya's Horticultural Export Sector.
Researcher: **Mrs. Florence N. Ondieki-Mwaura.**
Status of Research: On-going.
- Topic:* Human rights and Religion on International Collaboration.
Researcher: **Dr. M. Sakwa.**
Status of Research: On-going.
- Topic:* Legal Instrument for Content regulation in Digital Media Especially in the Field of Copy Copyright protection. A case study for Managing Musical Works in Kenya.
Researcher: **Peter O. Pete.**
Status of Research: On-going.
- Topic:* Investigating the Dynamics, Role and Media Content of Vernacular Radio Stations in Kenya for Enhanced Development, Security, Peace Building and Conflict Management Towards Vision 2030.
Researcher: **Dr. Mathoko, P. M.;** Dr. M. Sakwa and Mrs H. Mberia.
Status of Research: On-going.
- Topic:* The Role and Dynamics of Ethnicity. Paper presented in University Community Collaboration Seminar Series on Peace, Reconciliation and National Healing held between 5th- to 11th May 2008 at Jomo Kenyatta University of Agriculture and Technology, Science Complex.
Researcher: **Dr. Mathoko, P.M.**
Status of Research: Completed.
- Topic:* Effects of Duksi in the Teaching and Learning of Kiswahili in Primary Schools in Garissa, Kenya.' M. A. registered at Kenyatta University.
Researcher: **Dr. Mathoko, P. M.,** Wenyaa Salome, N.
Status of Research: Completed.
- Topic:* Proverb Usage in Composition Writing by Primary School Pupils in Thika District, Kenya. M. A. registered at Kenyatta University.
Researcher: **Dr. Mathoko, P. M.,** Gaitho, Gitau.
Status of Research: Completed.

- Topic:* Verbal Extensions in Lulogooli: A Lexical-Morphological Dimension. M. A. registered at Kenyatta University.
- Researcher:* **Dr. Mathooko, P. M.**; Mayodi, T.
- Status of Research:* Completed.
- Topic:* Case in Lulogooli Sentences. A Minimalist Theory Approach. M. A. registered at Kenyatta University.
- Researcher:* **Dr. Mathooko, P. M.**; Asiko Berverlyne
- Status of Research:* Completed.
- Topic:* Language Usage in the Music of Jacob Luseno. M. A. registered at Kenyatta University.
- Researcher:* **Dr. Mathooko, P. M.**; Wanyela Mary Mugasia
- Status of Research:* Completed.
- Topic:* Informativeness in News Broadcasts in Kenya. M. A. registered at Kenyatta University.
- Researcher:* **Dr. Mathooko, P. M.**; Sichangi Mukono
- Status of Research:* On-going.

10.3 DEPARTMENT OF COMMERCE AND ECONOMIC STUDIES

- Topic:* Determinants of Returns on Investment in Micro and small Enterprises.
Researcher: **Muturi W.M.**
Status of Research: Ongoing.
- Topic:* Bridging the gap between Researchers and farmers.
Researcher: **Muturi W.M.**
Status of Research: Ongoing.
- Topic:* Determinants of Adoption of Agro-forestry.
Researcher: **Muturi W.M.**
Status of Research: Ongoing.
- Topic:* The impact of venture Capital Finance on performance of SME in Kenya (Presented in Scientific conference JKUAT).
Researcher: **Florence S. Memba.**
Status of Research: Ongoing.
- Topic:* Role of factoring in finance SME in Kenya (Presented in Scientific Conference JKUAT)
Researcher: Karugu, W.N., **Oyugi, L.A** and Karugia, J.
Status of Research: Ongoing.
- Topic:* Cash flow management for SME (Presented in scientific Conference JKUAT)
Researcher: Karugu, W.N., **Oyugi, L.A** and Karugia, J.
Status of Research: Ongoing.
- Topic:* An Assessment of the Effects of Technology Transfer on Gender Role within A Community the Development of Tea and Coffee Production among small-holder Farmers in Kiambu District, Central Province, Kenya.
Researcher: Karugu, W.N., **Oyugi, L.A** and Karugia, J.
Status of Research: Ongoing.
- Topic:* Solid waste Management in Urban Centers in Kenya: operation, Environment Concerns and Community Participation.
Researcher: Karugu, W.N., **Oyugi, L.A** and Karugia, J.
Status of Research: Ongoing.
- Topic:* Opportunities of up-scaling production and marketing of food security crops in the marginal zones of Kenya.
Researcher: **Kavoi M.M**
Status of Research: Completed.