



## **CURRICULUM VITAE (JANUARY 2013 )**

### 1. **PERSONAL DETAILS**

**Name:** Stephen Mwenje Mutuli (Prof.)

**Date of Birth:** 28<sup>th</sup> August 1953

**Place of Birth:** Mombasa, KENYA

**Nationality:** Kenyan

**Marital Status:** Married with two children

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### 2. **ACADEMIC QUALIFICATIONS**

- (i) Bsc. Mechanical Engineering (2<sup>nd</sup> Class Honours, Upper Division )  
University of Nairobi, **1976**
- (ii) Msc. Mechanical Engineering, University of Nairobi, **1980**
- (iii) Diplome d'Etude Approfondie (DEA), Laboratoire de Mecanique des Solides, Universite de Poitiers, France **1982.**
- (iv) Diplome de Docteur de l'Universite de Poitiers, en Genie Mecanique  
Universite de Poitiers, France (PhD degree) **1986.**

3. **WORKING EXPERIENCE (INDUSTRY)**

<b>1973 - 1976</b>	I worked as a trainee in the Engineering Department at Bamburi Portland Cement Co. Ltd, Mombasa in all the long vacations from the university for 3 years( I was sponsored by the company for my undergraduate Bsc. Degree course in Mechanical Engineering)
<b>1976 - 1977</b>	I worked as a Trainee graduate Engineer at Bamburi Portland Cement Company Ltd. Mombasa

4.

**WORKING EXPERIENCE - UNIVERSITIES**

*Positions Held - University of Nairobi*

<b>6<sup>th</sup> Dec. 1978</b>	I was appointed Tutorial Fellow in the Department of Mechanical Engineering, University of Nairobi
<b>26<sup>th</sup> June 1980</b>	I was appointed Lecturer in the Department of Mechanical Engineering, University of Nairobi
<b>23<sup>rd</sup> Feb. 1989</b>	I was appointed Senior Lecturer in the Department of Mechanical Engineering, University of Nairobi

<b>1991-1994</b>	I was Coordinator of Industrial Research And Consultancy Unit (IRCU), Faculty of Engineering, University of Nairobi
<b>1992-1995</b>	I was appointed and served as Chairman, Department of Mechanical Engineering, University of Nairobi (3years)
<b>1995-1998</b>	I was re-appointed and served for a 2 <sup>nd</sup> term as Chairman, Department of Mechanical Engineering, University of Nairobi (3years)
<b>July 1994- Dec1999</b>	I was appointed and served as Manager of the University Garage and University transport Department, University of Nairobi
<b>1<sup>st</sup> April 1998- 31<sup>st</sup> June1998</b>	I was appointed and served as Acting Dean, Faculty of Engineering, University of Nairobi( The substantive Dean had traveled out of the country)
<b>5<sup>th</sup> July 1998</b>	I was appointed and served as Acting Principal, College of Architecture And Engineering for 1 week. (The substantive Principal had traveled out of the country)

<b>26<sup>th</sup> March 1999-Feb 2000</b>	I was appointed and served as Acting Dean, Faculty of Engineering, University of Nairobi
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<b>21<sup>st</sup> Dec 1999</b>	I was promoted by being appointed Associate Professor in the Department of Mechanical Engineering, University of Nairobi.
<b>18<sup>th</sup> Sept. 2007 -Sept 2010</b>	I was appointed and served as Chairman of the Department of Mechanical And Manufacturing Engineering of the University of Nairobi
<b>Sept2010-Sept2013</b>	I was re-appointed and I am serving as Chairman of the Department of Mechanical And Manufacturing Engineering of the University of Nairobi
<b>Nov 2008</b>	I was appointed and I am serving as Chairman of the Inspection And Acceptance Committee in the College of Architecture And Engineering of the University of Nairobi.
<b>Sept. 2010 – Aug. 2011</b>	I was appointed and I served as coordinator of the university transport department (for a period of 1 year) by the Vice-Chancellor

***Positions Held- Kigali Institute of Science, Technology And, Management (KIST)Kigali RWANDA ( Feb 2000 - May 2004 )***

<b>Feb 2000</b>	I took Sabatical leave from the University of Nairobi and I went to work at the Kigali Institute of Science, Technology And Management (KIST) in Rwanda
<b>Feb2000 – 30th May 2002</b>	I was appointed and served as Chief Academic Officer at the Kigali Institute of Science, Technology And Management (KIST), in Rwanda
<b>30<sup>th</sup> May 2002- 15<sup>th</sup> June 2004</b>	I was appointed and served as Director of Research And Publications at the Kigali Institute of Science, Technology And Management (KIST) in Rwanda

**5. ADMINISTRATIVE / ACADEMIC DUTIES PERFORMED**

***University of Nairobi***

***(i) As Lecturer, Senior Lecturer And Associate Professor- department of Mechanical engineering***

- Departmental Library coordinator (1979 – 1981 )
- 4<sup>th</sup> term Departmental coordinator (1986 – 1987 )
- Class Tutor for 2<sup>nd</sup> year (1986 –1989)
- Departmental Time-Table coordinator (1988 – 1990 )
- Departmental(8-4-4/8-4-5) Curriculum coordinator (1987 –1988 )
- Technical Staff Coordinator
- Lectured Solid And Structural Mechanics to 1<sup>st</sup>,2<sup>nd</sup>,3<sup>rd</sup>, and 4<sup>th</sup> year classes
- Industrial Attachment for 4<sup>th</sup> year students (2005-now)
- Supervised final year students' projects
- Subject leader in Solid And Structural Mechanics ( 2006 – now )

- (ii) *As Chairman Department of Mechanical Engineering (1992 –1998), And (2007 –2013 )*
- Chaired departmental meetings
  - Chaired Departmental examination Board meetings
  - Coordinated academic members of staff and technical members of staff in the department for the smooth running of the department
  - Ensure that academic programmes are proceeding smoothly in the department
  - Coordinated and took care of the maintenance and upkeep of laboratory equipment, furniture and office spaces and lecture rooms etc in the department
  - Chaired Curriculum development committee
  - Chaired committees for admission of Module II students in the department
  - Served as member of academic Qualification Committee(AQC) of the Engineers Registration Board (ERB)
  - Member of the faculty board of engineering
  - Member of Faculty Examination Board
  - Member of College Academic Board
  - Member of College Management Board
  - Member of University Senate
  - Supervised examination exercise and the processing of examinations in the department
  - Coordinated industrial attachments for students
  - Organised academic trips for students
  - Coordinated student affairs as well as counseling and giving advice to students in the department
  - Taught courses in Solid And Structural Mechanics to 2<sup>nd</sup>,3<sup>rd</sup>,4<sup>th</sup>, and5th year students
  - Taught courses in Msc. Program in Applied Mechanics
- (iii) *As Chairman, Inspection And acceptance Committee, CAE*
- Lead the committee in inspecting all goods procured in the college to ensure that the supplied goods correspond to the goods ordered
  - Chaired meetings that accept the supplied goods when they conform to the laid down conditions
- (iv) *As Acting Dean Faculty of Engineering (March1999-Feb2000)*
- Chaired Faculty Board meetings
  - Chaired Faculty Board of Examiner's meetings
  - Chaired Board of Examiner's meetings for the defence of postgraduate thesis in the faculty
  - Coordinated academic members of staff and technical members of staff in the whole faculty

- Ensured that academic programmes are proceeding smoothly in the whole faculty
- Member of College academic Board
- Member of College Management board
- Member of Dean's Committee
- Member of University Senate
- Ensured that examinations in the whole faculty are running smoothly
- Coordinated students' affairs as well as counseling and giving advice to students in the faculty
- Chaired Examination Boards for defences of Msc and PhD thesis in the faculty
- Member of University Admission Board
- Actively participated in the setting up of Module II programs in the faculty
- Chaired Faculty Admission Board for the admission of Module II students
- Participated as Senate representative in the students' disciplinary committee
- Member of university committees for students examination appeals
- Member of Joint Admissions Board (JAB) for admissions of regular students
- Chaired Faculty Shortlisting Committees for new appointments as well as promotions for both academic and technical members of staff in the faculty

(v) *As Manager of University garage, University Transport Department And University Petrol Stations (July 1994-Dec1999)*

- Supervised the day to day operations at the University Garage( in Upper Kabete Campus) and the Transport section (in the Main campus )
- Ensured the availability of funds from the Finance Section to purchase spare parts
- Coordinated the repair of vehicles ( engine overhauls, bodywork, panel beating and spray painting), repairs of punctures and the general servicing of university vehicles( buses , lorries,pickups)
- Coordinated and supervised the efficient use of university transport for university activities ( ie ferrying of students for classes, academic trips, trips for games as well as transport for funerals of families of members of staff and students
- Oversee the recruitment and appointment of mechanics, drivers, clerks, secretaries etc.
- Coordinated the renewal of insurance for university vehicles
- Ensured the availability of all brands of fuel ( Diesel, Super and regular) in the two petrol stations( Main Campus and Upper Kabete Campus)

***Kigali Institute of Science , Technology And management (KIST)***

(i) *As Chief Academic Officer at KIST ( Feb 2000 – May 2002)*

- Managed all the degree programmes and diploma programmes in the institute

- Chaired committee of Deans and Directors for normal academic issues,ie admission of students for onward for subsequent approval by the Senate
- Dealt with students' issues pertaining to their general welfare/ disciplinary cases
- Chaired committee that considered and approved new curricula/ revised curricula
- Chaired committee that approved examination results
- I was in-charge of the library activities and I was chairman of the Institute's library committee
- I coordinated the appointment of external examiners for the degree programs in the institute
- I organized the travel arrangements of external examiners and I was responsible for the general hospitality of these external examiners in the institute
- I was a member of the Senate
- I was a member of the Institute's Management Board
- I was a member of the Institute's Staff appointment Committee
- I was a member of the Institute's Staff Disciplinary Committee
- I was a member of the Institutes' Students Admission Board
- I coordinated all evening part-time courses in the institute
- I organized and coordinated general academic trips for students, as well as trips to Makerere University (Uganda) and Jomo Kenyatta University of Science And Technology (JKUAT), Kenya for carrying out laboratory experiments
- I managed the preparation of examinations in the institute including invigilation of examinations and the safe postage of Draft examinations to External Examiners
- I put in place a system to manage the safe custody of all approved examination results
- I was often involved in the counseling of students from the genocide trauma especially during the period of the national commemoration of this tragic event each year
- I prepared official transcripts for graduating students
- I was a member of a team that set up the Institute's Cooperative Society
- I chaired the committee that prepared and reviewed the criteria of promotion of academic staff in the institute
- I chaired the committee that developed the institute's curriculum for Bsc. degree in Mechanical Engineering, Bsc. degree in Electronic And telecommunication Engineering, Bsc.degree in Civil Engineering And Environmental Technology for Diploma Level ( after 3yrs of study) and degree level (after 5 yrs of study) as well as Diploma and Higher Diploma Technical Teacher Training Curriculum.
- As Chief Academic Officer, I was part of the team that organizes the first Graduation Ceremony at KIST  
This involved, among very many other important items, the choice of the design of the gowns for Diploma graduates and Degree graduates and the ordering of these gowns from South Africa ; as well as the design and the fabrication of the institute's mace for the graduation procession. I was the pall bearer for this first graduation procession attended by His Excellency, The President of the Republic of Rwanda,Paul Kagame, who was the chancellor of the Institution in the year 2003

(ii) *As Director of Research & Publication at KIST ( May 2002 – June 2004)*

- I promoted research in the Institute
- I chaired the committee that drafted the institute's research policy
- I got the institute to collaborate and join as member to other known international research institutions ie ANSTI ( African Network of Scientific And Technological Institutions), OSSREA ( Organisation of Social Science Research in Africa), CODESRIA ( Council For The Development of Social Science Research in Africa)
- I promoted the publications of research and other scholarly works in the institute
- I promoted the writing of proposals by lecturers to seek research funds for conducting research in the institute

6. **KENYA RAILWAYS CORPORATION**

I was appointed Member of the Board of Directors of Kenya Railways Corporation in 1996, for a period of three years. Here I was involved in the following:

- I actively participated as Board member in the regular meetings of the Board of Directors of Kenya Railways
- I chaired the technical Committee of the Board of directors
- I was a member of the Personnel Committee of the Board of director.

7.

**KENYA ACCREDITATION SERVICE**

- I was appointed Member of Technical Committee For Accreditation of Inspection Bodies- Testing And Calibration , a committee of the Kenya Accreditation Service ( KENAS) (2012)

8. **TEACHING OF POSTGRADUATE COURSES**

I have taught Experimental Stress Analysis to Mechanical Engineering students of Applied Mechanics Msc. Programme in the Department of Mechanical Engineering of the University of Nairobi

9. **POSTGRADUATE RESEARCH SUPERVISION (Msc. Thesis)**

- (i) ' The Mechanical Properties of Sisal and Loofah Fibre And their Composites Resulting from the reinforcement of Epoxy resin'  
**By Maina Maringa** Msc. Thesis, University of Nairobi , **1993**
- (ii) 'Mechanical Properties of Sisal Fibre Reinforced Concrete '  
**By Joackim Mukumbu Mutua**, Msc Thesis, University of Nairobi,**1993**
- (iii) ' The Mechanical Properties of Sisal Fibre reinforced mortar '  
**By Kirima C.C.M.** Msc Thesis, University of Nairobi, **1995**

- (iv) ‘ The effect of Chamfer Angle and Size on the Stress distribution And Stress Concentration factors in Thick – walled Cylinders with Cross-Bores Under Internal Pressure’  
**By John M. Kihiu**, Msc Thesis, University of Nairobi, **2000**
- (v) ‘ The Mechanical Properties of Sisal Fibre reinforced Composites of Epoxy resin and Rice Husk Pozzolan Cement ‘  
**By W.O. Ngala**, Msc. Thesis, University of Nairobi, **2000**
- (vi) ‘ An Intrinsic Discrete Dislocation Density – Finite Element Formulation of Metal Plasticity ‘  
**By Kenneth D. Njoroge**, Msc Thesis, University of Nairobi, **2008**
- (vii) ‘ Investigation on Characterization And Variability of Mechanical Properties of Reinforcing Steel Bars made from Scrap ‘  
**By Bernard Bukaragire Munyazikwiye**, Msc. Thesis, Jomo Kenyatta University of Agriculture And Technology (JKUAT), **2010**
- (viii) ‘ Optimisation of a Powder Transportation System Based on Traveling Ultrasonic Waves ‘ Msc Thesis, Jomo Kenyatta University of Agriculture And Technology ( JKUAT). **2012**  
**By Evan Murimi Wanjiru**
- (ix) ‘Characterization and Variability of Bending and Fatigue Properties in Reinforcing Steel Bars made from Locally Available scrap Metal’  
**By Nyamu Daniel Maringa**, Msc Research, JKUAT ( *Supervision on-going*)
- (x) ‘Study on the Effect of Heat on Properties of Reinforcing steel Bars made from Scrap Metal ‘  
**By Bangi Josephat Obwoye**, Msc Research, JKUAT (*Supervision on-going*)
- (xi) ‘ Quality of Welds From SMEs And JUAKALI Sector in the Perspective of Quality Fabrication/Innovation and Reconditioning/Repair of Machine/Equipment Parts’  
**By Birir K. John**, Msc Research, Institute of Nuclear Science, University of Nairobi ( *Supervision on-going*)

9. **POSTGRADUATE SUPERVISION - ( PhD THESIS )**

- (i) ‘ Wear and performance Characteristics of Some Polymers in Piston Water Pumps’  
**By M.N. Opondo** , PhD Thesis, University of Nairobi, **1997**
- (ii) ‘ Numerical Stress Characterization in Cross-Bored Thick – Walled Cylinders Under Internal Pressure ‘  
**By John M. Kihiu**, PhD Thesis, University of Nairobi, **2002**
- (iii) ‘ Technology Diffusion And Its impact On Product Development In The Informal MetalWorking Sector In Kenya ‘  
**By Julius Maima Ogola**, PhD Thesis, University of Nairobi,**2007**



- (iv) ‘ Assessment of Stone Crushing Characteristics And Development of Stone Crusher For Small Scale Entrepreneurs ‘ **PhD Research, Dept of Mechanical & Manufacturing Engineering, University of Nairobi ( Supervision on-going)**  
**By David Munyasi**

10. **SUPERVISION OF FINAL YEAR UNDERGRADUATE STUDENTS PROJECTS**

I have supervised more than 40 final year undergraduate student’s projects.

11. **EXTERNAL EXAMINATION**

I have served as an External Examiner in the following universities:

(i) **Egerton University ( Njoro, Kenya )**

Department of Mechanical Engineering  
( all undergraduate courses 1<sup>st</sup> - Final Year of study ) **1990 – 1992**

(ii) **Jomo Kenyatta University of Agriculture And Technology , Juja, Kenya**

Department of Mechanical Engineering  
( All Undergraduate courses 1<sup>st</sup> – Final Year of Study ) **1992**

(iii) **Makerere University ( Kampala, Uganda)**

Department of mechanical Engineering  
( All Undergraduate courses 1<sup>st</sup> – Final Year of Study) **1997- 2000**

(iv) **Moi University ( Eldoret, Kenya )**

Department of Technology Education  
( All Undergraduate courses 1<sup>st</sup> – Final Year of Study ) **1994-1996 , 2005-2009**

(v) **Kigali Institute of Science And Technology ( Kigali, Rwanda)**

Department of Mechanical Engineering  
( All Undergraduate courses Bsc degree in Mechanical Engineering 1<sup>st</sup> - Final Year ) **2011-2013**

12. **EXTERNAL EXAMINER ( Msc. THESIS EXAMINATION )**

I was appointed and served as External Examiner for the following Msc. Thesis examinations:

- (i) ‘ Influence of Modifiers And the Heat Treatment on the Fatigue Life And Mechanical Properties of Recycled Cast Aluminium Alloys ‘ Msc. Thesis  
**By Njuguna Michael Kamau**

Department of Mechanical Engineering, Jomo Kenyatta University of Agriculture And Technology (JKUAT) - **August 2007**

- (ii) ‘ Simulation of Dynamic Behaviour of an Excavator Due To Integrating Mechanical And Hydraulic Dynamics ‘ Msc. Thesis  
By **Onesmus Mutuku Muvengi**  
Department of Mechanical Engineering, Jomo Kenyatta University of Agriculture And Technology (JKUAT) - **April 2008**
- (iii) ‘ Modelling And Simulation of Vibrations of a Tractor Gearbox ‘ Msc. Thesis  
By **James Kuria Kimotho**  
Department of Mechanical Engineering , Jomo Kenyatta University of Agriculture And Technology (JKUAT) - **April 2008**
- (vi) ‘ Determination of Stress Intensity Factors in a Thick- Walled Cylinder With Multiple Axial cracks Using the Energy based Finite Element Method ‘  
Msc Thesis  
By **Kenneth Karanja Kiragu**  
Department of Mechanical Engineering, Jomo Kenyatta University of Agriculture And Technology (JKUAT) - **July 2010**
- (vii) ‘ Study on effects of Laser Ablation Conditions on Cut Quality And Microstructures Using  $CO_2$  Laser’  
By **Grace Wairimu**  
Msc Thesis (Mechatronic Engineering ) JKUAT - **July 2010**

13 **PART-TIME TEACHING ASSIGNMENTS**

I have taught as a Part-Time lecturer courses in Solid And Structural Mechanics in the following institutions :

- (i) Department of Production Technology , Moi University , **1987-1992, 1996**
- (ii) Department of Mechanical Engineering, Jomo Kenyatta University of Agriculture And Technology, **2004-2007**

14. **MEMBERSHIP OF PROFESSIONAL BODIES**

- (i) Registered with Engineers Registration Board (Reg. No. A1467 )  
( Registration being regularized after interruption )
- (ii) Member, Non-Destructive Testing Society (NDT Society ) of Kenya

15. **MEMBERSHIP OF ALLUMNI ASSOCIATION**

I am a member of the University of Nairobi Alumni Association – Bronze Life Member.  
Membership Card Number- UONAA 000 4387

16. **MEMBER OF EDITORIAL COMMITTEE – JOMO KENYATTA FOUNDATION**

I was a member of Editorial Advisory Committee- Jomo Kenyatta Tertiary Publishing Program - 1993

17. **PUBLICATIONS ( THESIS )**

- (i) **MUTULI S.M.** ‘ The properties of Sisal Fibre And Sisal Fibre Reinforced Composite materials ‘ Msc. Thesis, University of Nairobi,KENYA, **1979**
- (ii) **MUTULI S. M.** ‘ Mesure et Analyse des Champs de Vitesse a’ L’entrée d’un Contact Lubrifie Entre deux Cylindres ‘ Rapport de DEA, Universite de Poitiers- FRANCE, **1983**

*( Translation )*

**MUTULI S.M.** ‘ *Measurements And Analysis of Velocity Fields at the Entrance of a Lubricating Contact Between Two Cylinders* ‘ Report of DEA, University of Poitiers, France, **1983**

- (iii) **MUTULI S. M.** ‘ Determination du Champ de Vitesse dans des Films Lubrifiants Newtonien et Non-Newtonien ‘ These de Doctorat de L’Universite de Poitiers, FRANCE, **1986**

*( Translation )*

**MUTULI S.M.** ‘ *Determination of Velocity Fields in Newtonian And Non-Newtonian Lubricating Films* ‘ PhD Thesis, University of poitiers, FRANCE ,**1986**

18. **PUBLICATIONS IN INTERNATIONAL JOURNALS AND CONFERENCE PROCEEDINGS**

- (a) **MUTULI S.M., BESSEL T.J. And TALITWALA E.S.J**  
‘The Potential of Sisal as a Reinforcing Fibre in Cement Base Materials’  
African Journal of Science And technology (ANSTI) **Vol.1 No. pp. 5 – 6 , April, 1982**
- (b) **T.J. BESSEL, MUTULI S.M.**  
‘The Interfacial Bond Strength of Sisal- Cement Composites Using A Tensile Test ‘ Journal of Material science Letters’  
**pp 244-246, 1982**
- (c) **MUTULI S.M., D. BONNEAU et J. FRENE**  
‘ Velocity Measurements in the Inlet Zone of a Hydrodynamic Contact’  
Proceedings of the 10<sup>th</sup> Leeds-Lyon Symposium of Tribology,  
Development in Numerical And Experimental Methods Applied to  
Tribology, Butterworth, **pp 97-103, 1984**

- (d) **MUTULI S.M., D. BONNEAU et J. FRENE**  
 ‘Velocity Measurements Grease – Lubricating Film of a Sliding Contact’  
 ASLE Trans. **29.4 pp 515-522 , 1986**  
 ( ASLE – American Society of Lubrication Engineering )
- (e) **MUTULI S.M. , D. BONNEAU et J. FRENE**  
 ‘ Velocity Fields in Grease Lubricated Contacts Under Sliding Conditions’  
 Presented at the Leeds-Lyon Symposium on Tribology, Lyon, France.  
**September 1987**, Published in the Leeds-Lyon Symposium of Tribology  
**1988**
- (f) **MUTULI S.M. , D. BONNEAU, et J. FRENE**  
 ‘Velocity Fields in Grease Lubricated Contact’ Presented at the 6<sup>th</sup>  
 International Colloquim of Industry Lubricants- Properties, Applications,  
 Disposal. Stuttgart, Germany, **January 1988**. Published In the Journal of  
 Lubrication Science **2(a) pp 25-44, 1989**
- (g) **M. MARINGA, MUTULI S.M.,KAVISHE, P.L.**  
 Determination of Interfacial Bond Strength of Sisal Fibre Reinforced  
 Epoxy composites’ Published in East African Journal of Engineering  
 ( **EAJE**) **Vol.2 No.1 , 1995**
- (h) **J.M. MUTUA, L.O. GUMBE, MUTULI S.M.**  
 ‘ Some Mechanical Properties of Sisal Fibre Reinforced Concrete’  
 Discovery And Innovation **1997, 9 (3/4)**
- (i) **M. MARINGA, MUTULI S.M. ,KAVISHE F.P.L.**  
 ‘ An Investigation of the Mechanical Properties of Sisal Fibre, Loofah  
 Matt And their Composites with Epoxy Resin ‘ Published in the Journal of  
 Agriculture, Science And Technology (JAST) **Vol.1, Issue 1,1997**
- (j) **J.M. KIHU, MUTULI S.M.**  
 ‘Time And Space Management In Structural Analysis Problems’ The  
 International Journal of Mechanical Engineering Education . **Vol. 26**  
**No. 4, 1998 (pp273 – 292 )**
- (k) **J.M. MUTUA, L.O. GUMBE, S.M. MUTULI**  
 ‘ Interfacial Bond Strength For Sisal Fibre-Concrete Composites’  
 Discovery And Innovation **1999, 10 (1/20) pp 6-64**
- (l) **KIHU J.M. , RADING G.O. and MUTULI S.M.**  
 Stress Characterization in Autofrettaged Thick Walled Cylinders ‘  
 International Journal of Mechanical Engineering Education  
**Vol. 31, 004, pp 370-389,2003**
- (m) **KIHU,J.M., RADING G.O. and MUTULI S.M.**  
 ‘ Geometric Constants in Plain Cross-Bored cylinders’  
 Journal of Pressure Vessel Technology  
**Vol. 125 , pp 446-453 , 2003**

- (n) **KIHIU J.M., RADING G.O. And MUTULI S.M.**  
 ‘ Transition, Coverage And Constancy in Radiused Entry Cross-Bored Cylinders ‘ Transactions of the **CSME Vol. 28, No. 2B, 2004**
- (o) **J.M. KIHIU, G.O. RADING, S.M. MUTULI**  
 ‘ Universal SCFs And Optimal Chamfering In cross-Bored Cylinders’  
 International Journal of Pressure Vessels And Piping’ **84 (2007) 396-404**
- (p) **J.M. KIHIU, G.O. RADING and S.M. MUTULI**  
 ‘ Overstrain In Flush Optimal- Chamfered Cross-Bored Cylinders ‘  
 Proc. I.Mech E Vol. 220 Part C : J- Mechanical Engineering Science, **2006**
- (q) **J.M. KIHIU, G.O. RADING And S.M. MUTULI**  
 ‘ Overstraining Of Flush Plain Cross-Bored Cylinders ‘  
 Proc. Instn Mech. Engrs Vol 218 Part C: J. Mechanical Engineering  
 Science, **2004**
- (r) **B.B. MUNYAZIKWIYE, S.M. MARANGA, S.M. MUTULI**  
 ‘ Effect of Heat on Microstructure And Mechanical Properties  
 of Reinforcing Steel Bars ‘ Proceedings of the 2010 Mechanical  
 Engineering Conference on Sustainable Research and Innovation  
 , Vol.2 AICAD, 8<sup>th</sup>-9<sup>th</sup> April , Juja, Kenya, 2010 ( ISSN 2079-6226 )
- (r) **E. MURIMI, J KIHIU, G. NYAOKE, S. MUTULI, J. KIMOTHO**  
 ‘ Optimal Placement of a Piezoelectric Ring in an Ultrasonic Powder  
 Transport System’, Innovative Systems Design And Engineering.  
**ISSN 2222-1727 (paper) , ISSN 2222-2871 (on-line)**  
**Vol. 2, No. 4, 2011**
- (s) **MURIMI EVAN, KIHIU JOHN, NYAOKE GEORGE, STEPHEN  
 MUTULI, KIMOTHO JAMES**  
 ‘ Determination of Resonant Frequency of a Piezoelectric Ring for  
 Generation of Ultrasonic Waves’ Innovative Systems Design And  
 Engineering.  
**ISSN 2222-1727 (Paper) ISSN 2222-2871 (on-line), Vol2, No. 4, 2011**
- (t) **E. MURIMI, J. KIHIU, G. NYAOKE, S. MUTULI**  
 ‘ A Survey of Ultrasonic Waves in Powder Transportation’ **Proceedings of  
 the 2011 Mechanical Engineering Conference on Sustainable Research  
 And Innovation, AICAD , Kenya Vol. 3, 5<sup>th</sup> – 6<sup>th</sup> May 2011**
- (u) **NJOROGE K.D., MUTULI S.M., KIHIU J. M.**  
 ‘ An Intrinsic Dislocation Density- Finite Element Formulation of Metal  
 Plasticity’ **International Journal of Computational Engineering  
 Research ISSN : 2250-3005, 2012 (On-line)**

## **18. DRAFTS SUBMITTED FOR PUBLICATION**

- (i) **NGALA W.O., MUTULI S.M. and MUNYASI D.M.**  
‘ The Mechanical Properties of Sisal Fibre Reinforced Rice Husk Ash Pozzolanic Cement’
- (ii) **NGALA W.O. ,MUTULI S.M. and MUNYASI D.M.**  
‘ The Interfacial Bond Strength of Sisal Fibre Reinforced Rice Husk Ash Cement Composite ‘
- (iii) **MUTULI S.M., MUNYASI D.M. and MUTUKU A. NZEKI**  
‘ Development of An Experimental Rig for a Two-dimensional Stress and Strain Analysis Laboratory experiment
- (iv) **MUNYAZIKWIYE B.B., MARANGA S.M. and MUTULI S.M.**  
‘ Characterization of the Mechanical Properties of Reinforcing Steel Bars Produced From Scrap Metals : Case Study of Kenya Steel INDUS
- (v) **NJOROGE K.D., MUTULI S.M. , KIHU J.M.**  
‘ A Dislocation Density Evolution Model of Metal Plasticity ‘
- (vi) **J.O.BANGI, S.M. MARANGA, S.P.NGANGA, S.M. MUTULI**  
‘Variability of Fatigue Strength And The effect of Heat On Properties Of Reinforcing Steel Bars made From Local Scrap’
- (vii) **M.F ODUORI, S.M. MUTULI, D. MUNYASI**  
‘ Analysis of the Single Toggle Jaw Crusher Kinematics ‘
  - Submitted to the Journal of Engineering Design And Technology
  - Final revision being completed after peer review comments

## **19.**

### **BOOK PUBLICATIONS**

- (i) **Boiler, Piping and Pressure Vessel Cross-Bore Design Stresses**  
A Quick Design Approach  
By  
**John Kihiu, George Rading , Stephen Mutuli**  
VDM Verlag Dr. Muller GmbH & Co. KG, Germany 2011  
ISBN : 978 - 3 - 639 - 33020 - 5
- (ii) **Fundamentals of Solid and Structural Mechanics**  
*An Introduction to the Mechanics of Elastic Deformation of Structural Components*  
by  
**Stephen M. Mutuli**
  - First submitted to the University of Nairobi Press - 31/1/2011
  - Peer reviewer’s report received - 9/1/2012
  - Re-submitted after corrections and accepted for final publication – 20/11/2012

(iii) **Advanced Topics in Solid & Structural Mechanics**

by

**Stephen M. Mutuli**

**John M. Kihiu**

- First submitted to the University of Nairobi Press - 27/8/2012

(iv) **Basic Solid And Structural Mechanics**

Problems with Answers

by

**David Munyasi**

**Stephen Mutuli**

**Frank Oduori**

- Preparation in progress

(v) **Solid & Structural Mechanics**

*The Mechanics of Elastic Deformation of Structural Components*

By

**Stephen M. Mutuli**

**David Munyasi**

**Frank Oduori**

- Preparation in progress

(vi) **Mechanical Power transmission**

Theory and application

By

**Frank Oduori**

**Stephen M. Mutuli**

**David Munyasi**

- Preparation in progress

**20. TEXT BOOKS REVIEWED**

I have reviewed the following two text books for the African Network of Scientific And Technological Institutions (ANSTI/ UNESCO) :

(i) **STRENGTH OF MATERIALS**

Introductory Principles And applications

By **Kwesi Andam and Ayodele Abatam**

UNESCO AFRICA REGIONAL PROJECT on Development of Learning Materials in engineering Education ( DELTMEE)

**ISBNN 92-3-103228-3 , UNESCO 1996**

- (ii) ENGINEERING MECHANICS  
By **O.A. Bamiro, Negussie Tebedge, B. Alabi**  
UNESCO AFRICA REGIONAL PROJECT on Development of Learning  
Materials in Engineering Education ( DELTMEE )  
**ISBN 92-3-103227-5 UNESCO 1996**

**21. REFEREE FOR PUBLICATION IN A JOURNAL**

I reviewed the following one paper for its suitability for publication in for publication in *Discovery And innovation*, a Journal of the African academy of Science, **2003**  
**Municipal Solid Waste Characterization** ‘

**22. CURRICULUM DEVELOPMENT**

***University Of Nairobi***

I have participated in the preparation of the following curricula :

- (i) the current 5-year Bsc. Degree curriculum in Mechanical Engineering at the University of Nairobi.
- (ii) Msc. Degree in Industrial Engineering at the University of Nairobi

I am currently involved in reviewing / developing the following curricula in the Department of Mechanical And Manufacturing Engineering :

- (i) Msc. Degree in Engineering Management
- (ii) Certificate course in Metal – Forming
- (iii) Certificate course in Computer Aided Design ( CAD )
- (iv) Certificate course in Building Services Engineering
- (v) Certificate Course in Management

***Kigali Institute of Science , Technology And Management***

- (i) Curriculum for Upgrading of Technical Teachers from Technical Training Schools in areas of Carpentry and Joinery, Masonry, Plumbing, Machine Tools, Welding and Fabrication, Automotive, Electrical and Electronics (**March 2003**)
- (ii) Review of curriculum for Bsc. Degree in Mechanical Engineering
- (iii) Review of curriculum for Bsc Degree in Civil Engineering



**LINKAGES WITH OTHER UNIVERSITIES**

- (i) In **1997** , I traveled to Tolouse in France to the School of Chemical Engineering ( Ecole Nationale Superieure d’Ingenieur de Genie Chimique), through an invitation of the French Embassy in Nairobi. A link was established between the Department of Mechanical Engineering and this school and the following was achieved:
- An External Examiner from this institution served in the department for 3yrs
  - The department received a donation of 6 computers from the French Embassy, Nairobi
- (ii) I have participated in the initiation and the strengthening of a collaborative linkage between the School of Engineering of the University of Nairobi and the National Taiwan University of Science And Technology (NTUST) in Taipei, Taiwan. I got an invitation and visited this prestigious institution in the Year 2011 and following this visit the Department of Mechanical And Manufacturing Engineering succeeded in appointing one of the professors from the institution (NTUST) as an External Examiner for a period of three years. The following are the achievements made so far as well as those expected from this collaboration.
- Mr. Ernest Odhiambo a Tutorial Fellow in the Department of Mechanical And Manufacturing Engineering and Mr. David Koteng a Senior Lecturer from the Department of Civil And Construction Engineering have secured full scholarships from NTUST and are currently pursuing Phd studies there. Mr. Richard Kimilu has also secured a PhD scholarship and he is proceeding to the same institution for his PhD studies.
  - Four First Class honours graduate students from the Department of Mechanical And Manufacturing Engineering have secured scholarships and admissions at NTUST to pursue Msc.studies. Two of them Mr. Mosiria Bwana and Mr. Kingora Kamau have already commenced their studies at NTUST.
  - A Memorandum of Understanding ( MOU) is being finalized between the University of Nairobi and NTUST
- (iii) The department is currently finalizing the formalization of a link with the Technical University of Applied Science, Wildau, Germany to facilitate the exchange of students, exchange of staff and collaborative research cooperation

**24. SCIENTIFIC CONFERENCES ATTENDED**

- (i) 10<sup>th</sup> Leeds – Lyon Symposium of Tribology- Development in Numerical And Experimental methods Applied to Tribology, Lyon, France, **1983**
- (ii) 14<sup>th</sup> Leeds-Lyon Symposium on Tribology, Lyon, France, September, **1987**
- (iii) 6<sup>th</sup> International Colloquium on Industrial Lubricants, Properties, Applications Disposal, Stuttgart, Germany, January, **1989**
- (iv) 2<sup>nd</sup> International Symposium on Science and Technology, Harare, Zimbambwe, 10<sup>th</sup> – 14<sup>th</sup> September **1990**

- (v) International workshop on Composite Materials and Waste Minimization: Fibre Reinforced Materials Based on Local Resources : 8<sup>th</sup> – 9<sup>th</sup> Aug 1997, Daresalam, Tanzania
- (vi) Mechanical Engineering 6<sup>th</sup> Annual Seminar in the Theme ‘ Focus on the Role of Engineering Research for Industrial Development in the New Millenium 8<sup>th</sup> –9<sup>th</sup> June 2000, Jomo Kenyatta University of Agriculture And Technology(JKUAT) Juja, KENYA
- (iv) Workshop on Institutional management in Higher Education held at Kigali Institute of Science, Technology And Management (KIST) 3<sup>rd</sup> –6<sup>th</sup> March 2003 Kigali, Rwanda
- (v) Mechanical Engineering Conference on Sustainable Research And Innovation, Vol. 2 , AICAD 8<sup>th</sup>-9<sup>th</sup> April, Juja, Kenya 2010
- (vi) Mechanical Engineering Conference on Sustainable Research And Innovation,AICAD, Kenya 2011

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#### **CONSULTANCY WORK DONE**

- (i) Inspection of lifting equipment, compressed air and fire fighting installations for Moi Air Base ( Department of Defence ) 1989
- (ii) Design of a distillery plant for Kampala Bottling Company, 1990
- (iii) Design of an incinerator of Faculty of Veterinary Medicine, University of Nairobi, 1990
- (iv) Design of a cotton feeding mechanism for Mwea Cotton Ginnery, 1990
- (v) Inspection and valuation of printing machinery and equipment for SAMU Printers Ltd, Nairobi, 1990
- (vi) Inspection and valuation of tractors of Hughes Ltd, Nairobi, 1992
- (vii) Team leader for preparation of ‘ Training Proposal for Upgrading Technical Teachers from Technical schools in : Carpentry, Masonry, Plumbing, Machine Tools, Welding and Fabrication,Electrical and Electronics’,Rwanda March 2003.  
Client : UNDP
- (viii) Team Leader for the ‘Assesment, Selection Purchase and Installation of Workshop and Laboratory equipment for Kigali Istitute of Science, Technology And Management(KIST) 2003

26.

#### **PROJECTS INITIATED IN THE SCHOOL OF ENGINEERING**

##### ***Projects Aready Started And Progressing in The Department of Mechanical and Manufacturing Engineering***

- (i) ***Library For Students ( Department of Mechanical And Manufacturing Engineering) 2006***

This project was launched under my support in the Year 2006, through donations of text books by the then graduating students during their graduating party. Academic staff also made their contributions and the launch was made with a total

of 150 text books. Graduate students ,already in the working sector are invited each year for the graduating party and to donate a book for the library, hence the project being named ‘Donate-A –Book’ project. Today the library has a total of 500 text books and it is run and managed by the students. Already we have offers for donations of computers from our former graduates but the department has given and installed five computers for use by students in this library. The computers are connected to the internet.

**(ii) Career Guidance ( Department of Mechanical And Manufacturing Engineering)**

I have succeeded in organizing regular talks to our final year students by our former graduates as well as other personalities already in the working sector for career guidance. These talks have helped the department form a strong network with the former graduates in industry and the department has benefited from attachment of students in industry as well as secure of employment for our graduates. Many of our graduates in industry are today enrolling for postgraduate studies in management.

**(iii) Establishment of a Non-Destructive Testing (NDT) Laboratory**

I have been actively involved in the initiation and the establishment of a Non – Destructive Testing (NDT) Laboratory at the Institute of Nuclear Science And Technology of the University of Nairobi for Training, Research and Service Provision in the Field of NDT applications. This is a national project funded and supported by the International Atomic Energy Agency (IAEA) for a first phase of 4 years to the tune of 325048.00 Euros (Appx. 36Millions Ksh.). This is a first project of its kind in Africa set in a university and the following are the achievements so far made and the future expectations :

- Equipment to the tune of 25,000 Euros (Appx 2,741,000 Ksh) is in the process of being procured for the laboratory being set up. This shipment has now arrived in the country and it is awaiting clearance.
- One member of staff Mr. Mweru from the Department of Civil And Construction engineering is expected to proceed for a Fellowship training on NDT for a period of three months in South Africa or Tunisia, all expenses paid for by IAEA as part of the project funding this year.
- One other member of staff Mr. Michael Mangala from the Institute of Nuclear Science And Technology is expected to proceed beginning December this year for a Scientific visit for a period of one week at the Department of Mechanical Engineering, University of Zagreb, in Croatia, again all expenses paid for by IAEA as part of the project funding this year.
- Non-Destructive –Testing (NDT) as a course is being included in our curricula being revised in all the degree programs in the School of Engineering so that all our graduating students are all initiated in the techniques of NDT and are able to pursue further training in this line
- The Institute of Nuclear Science And Technology will be able to run professional training programs for practicing Scientists, Engineers and Technicians in the field of NDT hence help the country acquire the needed human resources for one of the country’s vision 2030 flagship project , the setting up of a Nuclear reactor for the production of electricity.

(iv) ***Establishment of Computer Laboratories in The Department of Mechanical & Manufacturing Engineering***

I have transformed two spaces in the department that were used as stores into two computer laboratories ,each with a capacity of twenty two (22) computers, all furnished and ready for use. The following are the immediate benefits that will accrue from this initiative:

- Students in the department will benefit from these facilities that will increase access to computers which will be an addition to the already existing computers.
- The department has already acquired a software AUTO DESK for the training of AutoCAD to students and these facilities will greatly enhance this training. Members of staff both academic staff and technical staff will also benefit from this training.

(v) ***Association of Friends of Mechanical Engineering ( FME )***

An association of Friends of Mechanical Engineering (FME) which acts as an umbrella body that brings together all our former graduates as well as friends to rally behind activities that are relevant and beneficial to the department is about to be officially registered with me as the patron. The following are the positive achievements so far made as well as future opportunities :

- The association has managed to rally our former graduates in financing through contributions towards the organizations of end-of year graduating parties for our final year graduating students for the years 2006, 2007, 2008, 2009, 2010 and 2011.
- The association has helped get former graduates to come and give career talks as well as participate in mentorship programs to our final year students.
- The association has managed to rally former graduates in giving contributions towards the donate-a book project that donates books to the student library.
- The association was able to give good visibility to our department that participated in the installation of a first water pump donated by Davis And Shirliff Co. Ltd under the Kiu Ya Amani peace initiative to Baraka Za Ibrahim Children Centre, a school for the orphans at Kamulu on the 6<sup>th</sup> October 2012. Kiu Ya Amani was the theme for the end-of year graduating party in the year 2011. Students from the department participated in this noble initiative at Kamulu.

*Projects Being Initiated In The School of Engineering*

*(i) Centre for Gender Support (School of Engineering)*

**REFEREES**

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