

CURRICULUM VITAE

FOR

Dr. Benard Muthiani

Kivunge

CURRICULUM VITAE

1.0 Personal Information:

Name: Dr. Benard Muthiani Kivunge

Date of Birth: 23rd November 1970

Languages spoken: English, Kiswahili and Kikamba

Mobile: 0724-611-844, 0764-874-844

Email: bkivunge@gmail.com

CURRENT ADDRESS:
Mathematics Department
Kenyatta University
P.O. BOX 43844 - 00100,
NAIROBI

PERMANENT ADDRESS:
P.O. BOX 9866 - 00200,
NAIROBI

2.0 Education/Qualifications:

Iowa State University, USA
Ph.D. in Pure Mathematics
GPA: 3.98/4.00

Ames, IA, 50011
August 2004

Kenyatta University,
Master of Science in Mathematics

Nairobi, Kenya
October 1997

Kenyatta University,
B.Ed (Science)
First Class Honors

Nairobi, Kenya
October 1995

3.0 Employment Experience:

Senior Lecturer
Department of Mathematics
Kenyatta University

Feb 2013 – to date

Senior Lecturer
Department of Pure and Applied Mathematics
Technical University Kenya

Aug 2011 – Feb 2013

Senior Lecturer
Department of Mathematics
Kenyatta University

April 2011 – July 2011

Lecturer
Department of Mathematics
Kenyatta University
June 2005 – April 2011

Lecturer, Si Tanka University, Huron, South Dakota.
Aug. 2004 – April 2005

Teaching Assistant, Iowa State University,
Aug 2000 – Aug. 2004

Tutorial Fellow, Kenyatta University,
Jan 1998 – June 2005

Graduate Teacher, Pindolia Academy, Nairobi
Aug 1997 – Jan 1998

Graduate Teacher, Kalulini High School
May 1995 – Dec 1995

4.0 Administrative Responsibility:

- Associate Dean, Graduate School
Kenyatta University
Nov 2018 – to date
- Chairman
Department of Mathematics, Kenyatta University
Aug 2013 – March 2017
- Head
Teaching Programmes and Publications, Kenyatta University
March 2013 – Aug 2013
- Chairman
Department of Pure and Applied Mathematics
Technical University Kenya
Aug 2011 – Feb 2013
- Teaching Practice Coordinator in charge of Makueni
and Machakos Counties
January 2011 – July 2011
- Departmental Examinations Coordinator- Mathematics Dept.
Nov 2005 – March 2010
- University Course Coordinator- African Virtual University,
Jan 1999- Dec 1999
- Chairman, KUSA Electoral Commission
2016 Elections
Kenyatta University
- Member, KUSA Electoral Commission
2013, 2014,2015 election
Kenyatta University
- Member, Board of the directorate of e-learning
April 2014 – March 2017
- Member, Kenyatta University Foundation Committee
Oct 2014 – to date
- Member, Students Re-appeals committee
Sept 2013
- Member, Kenyatta University Graduation Committee
June 2013 graduation
- Member of the School Scholarships and Travel Grants
June 2006 – July 2011
Committee – SPAS, KU
- Member of the School Strategic Plan Committee – SPAS
June 2006 – July 2011
- Member, Kenyatta University Tender Evaluation Committee
Nov 2008 – July 2011

- Member, Kenyatta University Ad Hoc Committee: Post Modern Library Tender Evaluation Committee Oct 2008

5.0 Postgraduate Supervision:

▪ Ph.D Supervision

Completed:

Mutembei Josephine Gatiira, Jomo Kenyatta University;

Title: *The Matrix Completion problem for $P_{o,1}$ - matrices.*

Graduated June 2018

Rao Wyclife Ogik, University of Nairobi.

Title: *On the structure of two-sided subloops of the multiplicative subloop of nonzero sedenions and the general subloop structure of 2^n -ons.*

Graduated June 2016

Waweru Peter Kamaku, Jomo Kenyatta University of Agriculture & Technology.

Title: *The Limitations in the Convectional ISBN-10 Code.*

Graduated June 2013

Njuguna Lydia Nyambura, Kenyatta University.

Title: *Hypercomplex numbers under Smith multiplications formula.*

Graduated Dec 2012

Rimberia Jane Kagwiria, Kenyatta University.

Title: *Ranks, subdegrees and suborbital graphs of symmetric group S_n acting on ordered r -elements subsets.*

Graduated Dec 2011

Ongoing:

2019 – Felix Komu, Kenyatta University;

Title: *The Projective Geometry Structure in \mathbf{Z}_n^* .*

2014- Jared Oduya Obong'o, Kenyatta University,

Title: *Cycle indices in Finite Permutation Groups.*

2014- Calvin Otieno Ochieng, Kenyatta University,

Title: *The Pythagorean triples and Fermat's Theorem.*

▪ MSc Supervision:

Completed;

1. 2018, Jordinah Nanjala Wekesa, Kenyatta University, Kenya. *The number of ring homomorphisms from \mathbf{Z}_n to \mathbf{Z}_n*
2. 2018, Florence Wairimu Ngugi, Kenyatta University, Kenya. *The projective geometry structure in \mathbf{Z}_n^**
3. 2015, James Mbugua Ngigi, Kenyatta University, Kenya, *Bounds for analytic functions of 3×3 matrices with elliptical numerical range.*
4. 2015, Erick K. Tanui, Kenyatta University, Kenya, *The WSS $P_{o,1}$ - matrix completion problem for digraphs of 2×2 , 3×3 , and some 4×4 matrices..*
5. 2014, Lao Hussein Mude, KU, *Enumeration of cyclic codes over $GF(13)$ and $GF(17)$*

6. 2013, Abuga, Joseph, KU, *The WSS P_o - matrix completion problem for digraphs of 2×2 , 3×3 , and 4×4 matrices with $q = 0, 1, 2, 3$ & 4 .*
7. 2013, Muchemi Kiboi Jacob, KU, *The number of cyclic codes over \mathbf{Z}_7 and \mathbf{Z}_{11}*
8. 2012, Barini, Geoffrey Onkundi, JKUAT, *Bounds of the second largest eigenvalues of some real symmetric matrices*
9. 2011, Okello, Irene Achieng, JKUAT, *Investigating the maximum determinant for an $n \times n$ matrix*
10. 2011, Paul Mwangi, KU, *The M_o - matrix completion problem for selected digraphs of 5×5 matrices with six edges.*
11. 2010, Kasii Joseph Muoka, KU, *Loop properties of split extensions for \mathbf{Z}_7 , S_3 , D_4 , quaternions and octonions.*
12. 2010, Obogi Robert Karioko, KU.: *The M_o - matrix completion problem for some digraphs of 5×5 matrices with five directed edges.*
13. 2010, Runji Flora Mati.: *Enumeration of cyclic codes over $GF(5)$.*
14. 2010, Omusambayi Laban Ombito. KU, *Enumerating the number of cyclic codes of length n over $GF(2)$.*
15. 2010, Njoroge James Mwangi, KU.: *The M_o - matrix completion problem for digraphs of 5×5 matrices with less than 4 directed lines.*
16. 2009, Achieng Ruth, KU.: *The M_o - matrix completion problem for digraphs of 4×4 matrices with $q = 4$ and 5 lines..*
17. 2009, Njoroge Peter Njau, KU.: *Enumeration of cyclic codes over $GF(3)$.*
18. 2008, Macharia Dishon Kahuthu, KU.: *Some loop properties of sedenions.*
19. 2008, Kimeu Arphaxad Ngwava, KU.: *Some properties of hyper complex number basal elements.*
20. 2008, Waweru Peter Kamaku, JKUAT.: *The M_o - matrix completion problem for digraphs of 4×4 matrices with $q = 4$ and 5.*
21. 2008, Kabusi A.M. Ruth, KU.: *The M_o - matrix completion problem for digraphs of 4×4 matrices with $q = 0, 1, 2$, and 3.*
22. 2007, Mutembei Josephine Gatiira, KU.: *M_o - matrix completion problem for digraphs of 2×2 and 3×3 matrices.*
23. 2007, Magero Fidelius Bunyasi, KU. : *Split extensions of Complex, Quaternions, Octonion basis elements.*

6.0 Conferences/Seminars/ Workshops

6.1 Seminars/Workshops/Schools Attended/participated:

- *16th – 19th June 2015.*
The Second Kenyatta University International Mathematics Conference.
Kenyatta University, Nairobi, Kenya
(1) Talk presented by Kivunge Benard & Lao Hussein: *Enumeration of cyclic codes over*
(2) *$GF(13)$*
(2) *Positive $P_{0,1}$ - Matrix Completion for selected order 3 digraphs.*
- *April 8th – 9th 2015*
Kenya National Examination Council, Silver Springs Hotel, Nairobi, Kenya.
Workshop on the Validation of the report on the adequacy of time allocated for KCPE Mathematics Examination Paper

- *March 18th 2014*
Stakeholders Workshop, Meru University of Science & Technology, Meru
Review of New and Revised Curricula for B.Ed(Science)
- *August 13th - 19th 2013*
Third Miles High Conference on Non associative algebra, Denver, Colorado, USA
Title of talk given: *Sign Matrices for Basal element multiplications.*
- *17th – 22th June 2013.*
The First Kenyatta University Mathematical Modeling Workshop.
Kenyatta University, Nairobi, Kenya
- *23rd May 2012*
Kenya Industrial Property Institute, Red Court Hotel, Nairobi, Kenya.
Patent Application Training Seminar
- *8th – 10th June 2011.*
The First Kenyatta University international Mathematics Conference.
Kenyatta University, Nairobi, Kenya
Title of talk presented: Sign Matrices for Frames of 2^n -Ons under Smith Conway and Cayley Dickson multiplications
- *10th – 14th August 2010*
1st East African Regional Scientific conference for School of Pure and Applied Sciences,
Kenyatta University, Nairobi, Kenya.
- *4th – 7th May 2010.*
Africa Educational Research Network (AERN) Summit,
Kenyatta University, Nairobi, Kenya.
- *26th August -4th Sept. 2009*
Data Analysis workshop and conference held in Mathematics Dept. Kenyatta University,
Nairobi, Kenya.
- *August 4th - 11th 2007*
Loops 2007, International Mathematical Conference, Prague, Czech Republic,
Title of talk given: *Sign Matrices and Hadamard matrices.*
- *August 10th - 17th 2003*
Loops'03, International Mathematical Conference, Prague, Czech Republic
Title of talk given: *Sedenions and Split Extension Subloops.*
- *Sept 13-14 2002:*
Topics in Linear Algebra Conference, Iowa State University
Title of talk given: *The nonnegative Po-Matrix Completion problem.*
- *April 4th and April 11th 2002*
Gave two talks in the weekly Linear Algebra Seminars in Iowa State University
Title of talk given: *The nonnegative Po-Matrix Completion problem.*

6.2 Convening and Coordinating Conference:

Conference Organizations

Title: The Second Kenyatta University international Mathematics Conference.
Theme: Emerging Trends in Mathematical Research for Technological and scientific Development
Dates: 16th - 19th June 2015
Venue: Kenyatta University, Nairobi, Kenya.

Title: The First Kenyatta University Mathematical Modeling Workshop 2013.
Theme: Enhancing Mathematical Modeling for Research and Development
Dates: 17th - 21st June 2013
Venue: Kenyatta University, Nairobi, Kenya.

Title: The First Kenyatta University international Mathematics Conference.
Theme: The Role of Mathematics as a Tool for Development
Dates: 8th - 10th June 2011
Venue: Kenyatta University, Nairobi, Kenya.

Title: 1st Data Analysis workshop and Conference
Theme: Mentoring African Research in Mathematics
Dates: 26th August -4th September 2009
Venue: Mathematics Department – Kenyatta University, Kenya

7.0 Research and Publications:

Article in referenced Journals

1. *Demonstratio Mathematica* ISSN 0420-1213
A publication of the Warsaw University of Technology, Warszawa, Poland
Volume XLII No 1 pp.23-39, March 2010
Title: *On the cycle indices of Frobenious groups.*
Website: <http://www.math.uctm.edu/iejpam/contents/201000103.html>
2. *International Electronic Journal of Pure and Applied Mathematics. IEJPAM*
Volume 1, No. 3 pp.46-59, September 2010.
Title: *On the cycle indices of Frobenious groups.*
Website: <http://www.math.uctm.edu/iejpam/contents/201000103.html>

Conference Proceedings

3. *Commentationes Mathematicae Universitatis Carolinae* 2004
Quarterly periodical by Mathematics Institute of Charles University, Prague, Czech Rep
Volume 45,2 (2004) 295-302
Title: *Subloops of Sedenions*
Website: <http://www.karlin.mff.cuni.cz/cmuc/cmucemis/cmucemis.htm>
4. *Electronic Journal of Linear Algebra* ISSN 1081-3810
A publication of the International linear Algebra Society
Volume 10, pp.46-59, March 2003
Title: *The nonnegative Po-Matrix Completion problem*
Website: http://www.math.technion.ac.il/iic/ela/ela-articles/articles/vol10_pp46-59.pdf

8.0 Research Grants:

- 2015 June: NACOSTI, Conference Research Grant Ksh 200,000
- 2015 June: London Mathematical Society (LMS), Conference Research Grant 2,000 British Pounds
- 2015 June: CDC through IMU, Conference Research Grant 2,000Euros
- 2013 June: NACOSTI, Workshop Research Grant Ksh 300,000
- 2011 June: NACOSTI, Conference Research Grant Ksh 500,000

8.1 Recognitions & Community Service

- Commission for University Education; Evaluation of proposed curriculum for Master of Science(Applied Mathematics) for Multimedia University, May 2017
- Commission for University Education; Evaluation of proposed curriculum for Master of Science(Pure Mathematics) for Multimedia University May 2017
- Commission for University Education; Evaluation of proposed curriculum for Master of Science(Pure Mathematics) for Kisii University, May 2016
- Commission for Higher Education; Evaluation of proposed curriculum for Bachelor of education (Applied Science) for the proposed Kenya Anglican University, July-Sept 2013.
- Commission for Higher Education; Credit Accumulation and Transfer System (CATS) Project for Bachelor of Education Feb – Sept 2011
- BOM Chairman – Nyayo Girls Secondary School - Ngiini, Machakos 2015- May 2017
- BOG Member – Nyayo Girls Secondary School - Ngiini, Machakos 2012- 2015
- BOG Member - Kiima Kiu Secondary School, Makueni 2007- 2013
- Treasurer – Kilome Constituency Development Forum May 2012 – to date
- Assistant Treasurer – Makueni County Development Forum May 2012 – May 2017
- Chairman, Kiima Kiu Welfare Association(KIWA) Dec 2009 – Dec 2013
- Chairman, Trans Savannah Investment & Development Co May 2012 – to date
- Chairman, Silicon Savannah Sacco, July 2014 – to date
- Member, PTA, Machakos Girls High School March 2014 – Dec 2017
- Member, Church Development Committee, AIC Kasarani. March 2007 – March 2013
- Secretary, Church Development Committee, AIC Syokimau. March 2015 – to date
- Mathematical Reviewer of American Mathematical Society. “Asymptotic bound on binary self-orthogonal codes.” November 2009.

8.2 External Examination

- External Examiner – Murang’a University College, April 2013 – April 2017
- External Examiner – Kirinyaga University College, August 2012 – to date
- External Examiner – JKUAT, March 2012 – March 2017
- External Examiner – Technical University Mombasa, 2009 – to date
- External Examiner – Kiriri Women University of Science and Technology, 2007 - 2016

8.3 Ph.D Thesis Examination

- Patrick Kimani Mwangi, Kenyatta University, March 2019
TITLE: *RANKS, SUBDEGREES, CYCLE INDICES AND STRUCTURES ASSOCIATED WITH THE ACTION OF $PGL(2,q)$ AND $PSL(2,q)$ ON THE COSETS OF THEIR SUBGROUPS*
- Marani Vincent Nyongesa, Kibabii University, March 2019
TITLE: *SOME CODES, GRAPHS AND DESIGNS FROM MATHIEU GROUPS M_{24} AND M_{23}*
- Rukaria Lydiah Kananu, Kibabii University, February 2019
TITLE: *CODES, DESIGNS AND GRAPHS OBTAINED FROM SOME PROJECTIVE SYMPLECTIC GROUP*
- Fidelius Bunyasi Magero, Kenyatta University, June 2015
Title: *Cycle indices, subdegrees and suborbital graphs of $PSL(2,q)$ acting on the cosets of its subgroups*
- Moses Kagongo Rutto, Kenyatta University, June 2015
Title: *Ranks and Subdegrees of the Cyclic group, the dihedral Group and the affine group and associated suborbital graph.*

8.4 Teaching Excellency

- | | | |
|--------------------------------|------------------|-----------|
| • SMA 204 ALGEBRAIC STRUCTURES | SEM I 2014/2015 | SCORE 95% |
| • SMA 204 ALGEBRAIC STRUCTURES | SEM II 2013/2014 | SCORE 92% |
| • SMA 400 TOPOLOGY I | SEM I 2013/2014 | SCORE 97% |
| • SMA 103 ANALYTIC GEOMETRY | SEM I 2012/2013 | SCORE 96% |
| • SMA 335 O.D.E I | SEM I 2010/2011 | SCORE 94% |

9.0 Networking and Collaboration with other Organizations/Institutions:

(a) Jomo Kenyatta University of Agriculture and Technology

- 2010-2013, Successfully supervised Peter Waweru in his Ph.D. Thesis entitled The Limitations in the Convectional ISBN-10 Code JKUAT
- 2011-2012, Successfully supervised Barini Geoffrey Onkundi in his Msc. Thesis entitled Bounds of the second largest eigenvalues of some real symmetric matrices
- 2010-2011, Successfully supervised Okello Irene Achieng in her Msc. Thesis entitled *Investigating the maximum determinant for an $n \times n$ matrix* JKUAT

10.0 Membership to Professional Bodies:

- The American Mathematical Society.
- The Phi Kappa Phi

11.0 Referees:

Prof. Ileri Kamuti
Mathematics Department
Kenyatta University
P.O BOX 43844-00100
Nairobi.
(Cell) 0720-895983

Prof. David Malonza
Mathematics Department
Kenyatta University
P.O BOX 43844-00100
Nairobi.
(Cell) 0723-911638

Prof. Leo Odongo
Mathematics Department
Kenyatta University
P.O BOX 43844-00100
Nairobi.
(Cell) 0722-387299