Abridged Curriculum Vitae

Personal Details

Name:	Winifred Nduku Mutuku (B.Ed., MSc, PhD)
Citizenship:	Kenyan
Address:	Kenyatta University, Department of Mathematics & Actuarial Science, P.O. Box 43844 – 00100, Nairobi, Kenya
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Current Designation:	Senior Lecturer and Chairperson, Department of Mathematics and Actuarial Science

Academic Qualifications

Qualification type:	PhD (2014)
Field of Study:	MHD Nanofluid dynamics
Institution:	Cape Peninsula University of Technology, South Africa
Qualification type:	MSc. (2007)
Field of Study:	MHD fluid dynamics
Institution:	Kenyatta University, Kenya

Publications

1. Oke, A.S. and **Mutuku, W.N**. (2021). Significance of Viscous Dissipation of MHD Eyring-Powell Flow past a Convectively Heated Stretching Sheet, Pramana - J Phys 95, 199 (2021). https://doi.org/10.1007/s12043-021-02237-3
2. Oke, A.S. and **Mutuku, W.N**. (2021). Significance of Coriolis Force on Eyring-Powell Flow Over A Rotating Non-uniform Surface, Applications and Applied Mathematics: An International Journal (AAM), Vol. 16, Iss. 1, Article 36
3. Kinyanjui J.K., **Mutuku, W. N.** & Oyem, A. O. (2021). Analysis of Volume Fraction and Convective Heat Transfer on MHD Casson Nanofluid over a Vertical Plate, Fluid Mechanics. Vol 7(1), pp1-8 http://www.sciencepublishinggroup.com/j/fm doi: 10.11648/j.fm.20210701.11 ISSN: 2575-1808 (Print); ISSN: 2575-1816 (Online)
4. Oke, A.S., Animasaun, I.L., **Mutuku, W.N**., M. Kimathi, Shah, M.N. & Saleem, S. (2021), Significance of Coriolis force, volume fraction, and heat source/ sink on the dynamics of water conveying 47 nm alumina nanoparticles over a uniform surface, Chinese Journal of Physics. Vol. 71, pp 716-727
5. Nyamai A.M. & **Mutuku W.N.** (2021). Modeling the Effect of Inpatient Rehabilitation of Tobacco Smokers on Smoking Dynamics, Journal of Advances in Mathematics and Computer Science, 36(4), pp 1-14, Article no.JAMCS.67608, *ISSN: 2456-9968*
6. Oyem, A.O., Mutuku, W.N., Edogbanya, H.O., Oke, S. & Garbas, B.B. (2021). Newtonian Heating on MHD Stagnation point flow over a flat plate, FUW Trends in Science & Technology Journal, e-ISSN: 24085162; p-ISSN: 20485170; April, 2021: Vol. 6 (1), pp. 262 – 269.

7. **Mutuku, W. N.** & Oyem, A. O. (2021). Casson Fluid Stagnation Point flow towards a vertical shrinking/stretching sheet, FUDMA Journal of Sciences (FJS), Vol. 5 No. 1, March, 2021, pp 16 – 26, *DOI: https://doi.org/10.33003/fjs-2021-0501-xxx*
8. Okello, J. A.,Oyem, A.O. & **Mutuku, W. N. (**2021**)**. Examination of Engine oil-based ((MWCNTs-TiO_2), (MWCNTsAl_2O_3), (MWCNTs-Cu)) Hybrid Nanofluids for Optimal Nanolubricant, IOSR Journal of Mathematics (IOSR-JM) e-ISSN: 2278-5728, p-ISSN: 2319-765X. Vol. 17(2), PP 24-38.
9. Bada, O.I., Oke, A.S., **Mutuku, W.N**. & Aye, P.O. (2021). Analysis of the Dynamics of SI-SI-SEIR Avian Influenza A(H7N9) Epidemic Model with Re-infection, Earthline Journal of Mathematical Sciences, Vol. 5 (1), pp.43-73 https://doi.org/10.34198/ejms.5121.4373.
10. Wekesa W.S & (2020). Numerical Analysis of Heat Transfer of Eyring Powell Fluid Using Double Stratification of Magneto-Hydrodynamic Boundary Layer Flow, Asian Research Journal of Mathematics, Vol.16(10), pp. 91-108, Article no.ARJOM.62194, *ISSN: 2456-477X*.
11. Mwaighacho, E. & Mutuku, W. N. (2020). Dissipative Heat Transfer on Hydromagnetic Flow of Copper and Alumina Ethylene-Glycol Based Nanofluid Over A Heated Vertical Plate**,** *IOSR* Journal of Mathematics (IOSR-JM), e-ISSN: 2278-5728, p-ISSN: 2319-765X. Vol. 16 (5), PP 34-43.
12. Oke, A.S, **Mutuku, W. N.**, Kimathi, M., & Animasaun, I.L.(2020). Coriolis effects on MHD newtonian flow over a rotating non-uniform surface, Proc IMechE Part C: J Mechanical Engineering Science 0(0), pp. 1–13, DOI: 10.1177/0954406220969730.
13. Okello, J. A., **Mutuku, W. N.** & Oyem, A. O. (2020). A Review of Nanofluids Synthesis, Factors Influencing Their Thermophysical Properties and Applications, Journal of Engineering Research and Reports, Vol.17(4), pp. 1-17, 2020; Article no.JERR.61551, ISSN: 2582-2926
14. Oke, A.S, **Mutuku, W. N.**, Kimathi, M., & Animasaun, I.L.(2020). Insight into the dynamics of non-Newtonian Casson fluid over a rotating non-uniform surface subject to Coriolis force, Nonlinear Engineering, Vol. 9, pp. 398–411, https://doi.org/10.1515/nleng-2020-0025
15. Okello, J. A., **Mutuku, W. N.** & Oyem, A. O. (2020). Analysis of Ethylene Glycol (EG)-based ((Cu-Al_2O_3), (Cu-TiO_2), (TiO_2-Al_2O_3)) Hybrid Nanofluids for Optimal Car Radiator Coolant, Journal of Engineering Research and Reports, Vol. 17(2), pp.34-50, Article No.JERR.61548, ISSN: 2582-2926
16. Oyem, A.O., **Mutuku, W.N.** & Oke, A.S. (2020). Variability effects on magnetohydrodynamic for Blasius and Sakiadis flows in the presence of Dufour and Soret about a flat plate, Engineering Reports, Vol. 2(1), DOI: 10.1002/eng2.12249
17. Okello, J.A. & **Mutuku ,W.N**. (2020). Mathematical Modelling of Variable Viscosity Hydromagnetic Boundary Layer Flow with Thermal Radiation and Newtonian Heating, International Journal of
Advances in Scientific Research and Engineering, 6(6), DOI: 10.31695/IJASRE.2020.33726.
18. Ajibola, S. O., Oke, A. S. & **Mutuku**, W.N. (2020). LHAM Approach to Fractional Order Rosenau-Hyman and Burgers' Equations, Asian Research Journal of Mathematics, 16(6), pp.1-14, Article no.ARJOM.56832, *ISSN: 2456-477X*.
19. Ouru, J.O., **Mutuku**, **W.N**. & Oke, A. S. (2020). Buoyancy-Induced MHD Stagnation Point Flow of Williamson Fluid with Thermal Radiation, Journal of Engineering Research and Reports, 11(4), pp. 9-18,; Article no.JERR.55741, ISSN: 2582-2926.
20. Matendechere, N.I, **Mutuku**, **W.N.** & Nyabadza, F. (2019). Modelling the Dynamics of Jiggers Infestation incorporating media campaigns, Journal of *Communications* in *Mathematical Biology* and *Neuroscience*, https://doi.org/10.28919/cmbn/4096, ISSN: 2052-2541

21. Matendechere, N.I, **Mutuku**, **W.N.** & Nyabadza, F. (2019). Modelling the Dynamics of Jiggers Infestation: Insights from a theoretical model, Journal of Mathematics and Computing, Vol 4(9), pp. 473-500, https://doi.org/10.28919/jmcs/4107, ISSN: 1927-5307
22. Kimulu, A.M., **Mutuku**, **W.N.** & Mutua, N.M. (2018). Car Antifreeze and Coolant: Comparing Water and Ethylene Glycol as Nano Fluid Base Fluid, International Journal of Advances in Scientific Research and Engineering, Vol 4(6), DOI: http://dx.doi.org/10.7324/IJASRE.2018.32748
23. **Mutuku**, **W.N**. & Makinde, O.D. (2017). Double stratification effects on heat and mass transfer in unsteady MHD nanofluid flow over a flat surface, Asia Pacific Journal on Computational Engineering, Vol. 4 (2), DOI 10.1186/s40540-017-0021-2
24. **Mutuku**, **W.N**., Makinde, O.D. & Theuri, D. (2017). Hydromagnetic Mixed Convection Flow of Nanofluid with Slip, Viscous Dissipation and Joule Heating Past an Inclined Plate, Journal of Nanofluids, Vol. 9, pp.1 – 9.
25. **Mutuku**, **W.N**. (2016). Ethylene Glycol (EG)-based Nanofluids as a Coolant for Automotive Radiator, Asia Pacific Journal of Computational Engineering, Vol. 3(1), DOI 10.1186/s40540-016-0017-3.
26. Kaneba, C.N. & **Mutuku**, **W.N**. (2016). Hydromagnetic Boundary Layer Slip Flow and Heat Transfer with Thermal Radiation and Viscous Dissipation, International Journal of Applied Science and Mathematics, Vol. 3(1), ISSN (Online): 2394 – 2894.
27. **Mutuku**, **W.N**. & Makinde, O.D. (2014). MHD Nanofluids Flow over a Permeable Vertical Plate with Convective heating, Journal of Computational and Theoratical Nanoscience, Vol. 11, pp. 1-9.
28. Makinde, O.D. & **Mutuku**, **W.N**. (2014). Hydromagnetic thermal boundary layer of nanofluids over a convectively heated flat plate with viscous dissipation and Ohmic heating, U.P.B. Sci. Bull., Series A, Vol. 76 (2), ISSN 1223 – 7027.
29. **Mutuku**, **W.N**. & Makinde, O.D. (2014). Hydromagnetic Bioconvection of Nanofluid over a Permeable Vertical Plate due to Gyrotactic Microorganisms, Computers and Fluids, vol. 95, pp. 88 – 97.
30. **Mutuku**, **W.N**. & Makinde, O.D. (2014).On hydromagnetic boundary layer flow of nanofluids over a permeable moving surface with Newtonian heating, Latin American Applied Research, Vol. 44 (1), pp. 57-62.
31. **Mutuku**, **W.N**. & Yan, B. (2014). MHD Boundary Layer Flow and Heat Transfer of Nanofluids Past a Permeable Moving Flat Surface with Convective Heating and Viscous Dissipation, Clifford Analysis, Clifford Algebra and their Applications (CACAA), Vol. 3(2), PP.183-192.
32. **Mutuku**, **W.N**. (2014). MHD Non-linear Boundary Layer Flow and Heat Transfer of Nanofluids Past a Permeable Moving Flat Surface with Thermal Radiation and Viscous Dissipation, Universal Journal of Fluid Mechanic, Vol. 2, pp. 55-68.
33. **Mutuku**, **W.N**., Kithome, S.M. & Awuor, K.O. (2014). Analysis of MHD Thermal Boundary Later Flow of Naofluids over a Convectively Heated Moving flat Plate, Journal of fluid and thermal sciences, Vol. 2(1), pp. 1-19.
34. **Mutuku**, **W.N**. & Makinde, O.D. (2013).Combined Effect of Buoyancy Force and Navier Slip on MHD Flow of a Nanofluid over a Convectively Heated Vertical Porous Plate, The Scientific World Journal, Article ID 725643, 8 pages.

Supervision of Postgraduate

Completed and Awarded

Three (3) PhD Students
Fifteen (15) MSc students

Ongoing

Three (3) PhD Students
Six (8) MSc students

Academic Grants and Awards

2020

- Belinda & Bill Gates Research Grant for Women Economic Empowerment.
- GeMVi Research Fellowship (for the project entitled, "Estimating HIV Incidence in Kenya)"

2019

- Commission for Developing Countries (CDC) of the International Mathematical Union (IMU) – Conference Support grant
- Centre for Mathematics, Science and Technology Education in Africa – Conference support grant

2017

- Commission for Developing Countries (CDC) of the International Mathematical Union (IMU) – Conference Support grant

2016

- Kovaleskia Research Grant: for outstanding work on research and publications in Applied MathematicsEPSRC Institutional Sponsorship Award:
- Global Challenges Research

2015 IMU- SIMONS Travel Grant Program 2015 Grant

Courses/Workshops Attended

7th – 11th February, 2022	Implementation Research Methodology and Applications
2nd & 16th December 2021	GeMVi Infectious Disease Modelling Workshop
17th – 21st August 2020	UNESCO-Huawei Artificial Intelligence Training
2nd – 4th December, 2019	MATLAB Numerical Computing Course
6th – 30th May 2019	Training Course on R – Statistical Software.

Research Interest

- Modeling infectious diseases
- Fluid mechanics
- Thermal Science
- Nanotechnology
- Biomathematics
- Artificial Intelligence
- Gender relates issues: Gender inequality in STEM, Teenage Pregnancy & Gender Based Violence

Community Engagements

Kenyatta University:	Kenyatta University STEM club Patron
National Aids Control Council:	Member of Strategic Information Technical Working Group (SI-TWG)
Masii Girls' School:	Chairperson, School Board of Management

Memberships

- Organization for Women in Science for the Developing World (OWSD)
- Kenya Women in Mathematical Sciences Association (KWIMSA)
- African Women in Mathematics Association (AWMA).