

# Dr. Wachira Charles Muriuki

## Curriculum Vitae



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### Research Interests

- *Modeling*: Modeling Disease Transmission Dynamics, Modeling Dynamical and Ecological Systems, Stochastic Modeling, Economic Modeling and Analysis of PDEs and ODEs.
- *Analysis*: Statistical Analysis using R, SPSS, STATA e.t.c

### Skills and Attributes

- *Analytical Skills*: Recognizes areas of weakness requiring improvements and makes recommendation to the management for consideration, approval, and implementation.
- *Teamwork*: Posses strong commitment to team dynamics with the ability to contribute expertise and follow any directives at appropriate times.
- *Communication skills*: Communicates very well both orally and in writing. Possess good presentation skills and people handling techniques.
- *Priorities and Decision Making*: A successful track record in setting priorities; keen analytic and problem solving skills which support and enable sound decision making.
- *Planning and Organizing*: Refined planning and organizing skills that balances work, team support and responsibilities in timely manner.
- *Computer skills*: Possess very good computer packages skills, type setting and excellent in Ms excel, publishing and word document.
- *Integrity, Honesty, Commitment to institution/company core values*. Ability to stay calm when customer is pissed or upset. Friendly and helpful interpersonal style.

### Career Objective

- *To be part of a progressive organization/institution that indulges professional growth and allows me to utilize my knowledge and skills.*

### Teaching and Work Experience

Nov. 2024 – **Lecturer, Mathematics and Statistics Department-Machakos University (MksU), Machakos, Kenya**

to Date

Detailed responsibilities:

- Teaching and assessment undergraduate and postgraduate students in Applied Mathematics field.
- Prepare course contents, set examination and grade exams in Applied Mathematics field.
- Research and Community service.

Sept. 2016 - **Part-time Lecturer**, *Masinde Muliro University of Science and Technology (MMUST)*, Kakamega, Kenya  
 Dec. 2024

Detailed responsibilities:

- Teaching and assessment undergraduate Mathematics courses.
- Prepare course content, set examination and grade exams in Mathematics courses.

Jan. 2019 - **Part-time Lecturer**, *Kaimosi Friends University (KAFU)*, Kaimosi, Kenya  
 Dec. 2024

Detailed responsibilities:

- Teaching and assessment undergraduate Mathematics courses.
- Prepare course content, set examination and grade exams in Mathematics courses.

**Courses Taught : (MMUST & KAFU)**

MAT 853: PDE I, MAT 854: PDE II, MAT 858: Numerical Analysis and Computation for DEs, MAT 427: Numerical Analysis III, MAT 421: PDE I, MAT 422: PDE II, MAT 423: ODE II, MAT 426: Fourier Series/Analysis, MAT 301: Engineering Mathematics III, MAT 302: Differential Equations, MAT 104/201: Linear Algebra, MAT 428: Mathematical Modeling, MAT 432: Bifurcations and Dynamics, MAT 121: Differential Calculus, MAT 124: Integral Calculus, MAT 101: Pure Mathematics I, MAT 103: Pure Mathematics II, DIT 071: Discrete Mathematics, DND 054: Basic Mathematics.

July 2024 - **Senior Technician III**, *Masinde Muliro University of Science and Technology, Mathematics Department and Directorate of Open and Distance e-learning (ODel)*, Kakamega, Kenya.  
 Nov. 2024

Detailed responsibilities:

- Teaching undergraduate courses and assisting students in mathematics laboratory (Online and Distance e-Learning).
- Online student support and assisting in online teaching and handling technical issues in the LMS system.
- Conduct students and lecturer's training on LMS and Moodle navigation.

Nov. 2020 - **Staff Development**, *Masinde Muliro University of Science and Technology, Mathematics Department*, Kakamega, Kenya.  
 Nov. 2022

Detailed responsibilities:

- Teaching (2 undergraduate courses) and assisting in office administration for at least 12 hrs per week.

April. 2020 - **Instructional Designer**, *Masinde Muliro University of Science and Technology, Directorate of Open and Distance e-learning (ODel)*, Kakamega, Kenya.  
 Oct. 2020

Detailed responsibilities:

- Online student support and assisting in online teaching.
- Conduct students and lecturer's training and co-ordination of online exams.

July. 2016 - **Internship**, *Masinde Muliro University of Science and Technology, Mathematics Department*, Kakamega, Kenya.  
 Jan. 2018

Detailed responsibilities:

- Clerical duties such as filing of documents.
- Any other duties as assigned by the head of department.

Feb. - April. 2015 **Industrial Attachment**, *KTDA-Ragati Tea Factory*, Karatina, Kenya

Detailed responsibilities:

- Procurement Department: Auditing of financial reports on daily, weekly and monthly basis.
- Finance/Accounts Department: Entering cheques in the cheque vouchers.

Aug. 2010 - **Draughtsman, MAK Consulting Engineers**, Nairobi, Kenya

Sept. 2011 Detailed responsibilities:

- Preparation of working drawings in mechanical and electrical engineering using AutoCAD and Autodesk software.
- Mathematical Verification of priced BQ's for tender applicants.

May - July 2010 **An Ungraded Teacher, Kabiru-*ini Secondary School***, Karatina, Kenya

Detailed responsibilities:

- Teaching and Evaluation in Mathematics and Physics subjects.

## Education Background

Feb. 2019 - Dec. 2022 **Doctor of Philosophy in Applied Mathematics, Masinde Muliro University of Science and Technology**, Kakamega, Kenya  
Thesis Title: *Modeling and Analysis of COVID-19 Dynamics with intervention*

Sept. 2016 - Dec. 2018 **Master of Science in Applied Mathematics, Masinde Muliro University of Science and Technology**, Kakamega, Kenya  
Thesis Title: *A Spatiotemporal Model for the Transmission Dynamics of Zika Virus Disease*

Aug. 2011 – Dec. 2015 **Bachelor of Science in Mathematics - (First Class Honours), Masinde Muliro University of Science and Technology**, Kakamega, Kenya  
Project Title: *Mathematical Modelling of Typhoid Fever Disease Incorporating Protection against Infection.*

Jan 2006 – Nov 2009 **Kenya Certificate of Secondary Education (KCSE), Kabiru-*ini Secondary School***, Karatina, Kenya, *Grade B+ (68 Points)*  
Subjects: English, Kiswahili, Mathematics, Physics, Biology, History and Government, Christian Religious Education, and Agriculture

## Professional Certificates

July – August 2010 *Certificate in AutoCAD Level 1 - Diverse Computer Systems*, Nairobi, Kenya.

March – April 2010 *Certificate in Computer Packages* - Kabiru-*ini Computer Training Center*, Karatina, Kenya.

## List of Publications

- [1] J. K. Nthiiri, G. O. Lawi, C. O. Akinyi, D. O. Oganga, **W. C. Muriuki**, M. J. Musyoka, P. O. Otieno and L. Koech, *Mathematical Modelling of Typhoid Fever Disease Incorporating Protection against Infection* British Journal of Mathematics & Computer Science. 14(1): 1-10, 2016, Article no.BJMCS.23325 ISSN: 2231-0851.
- [2] H.O.Nyaberi and **C.M. Wachira**, *Mathematical model on the impact of protection against Tungiasis transmission dynamics* Journal of Mathematics Comput. Sci. 10 (2020), No. 6, 2808-2819
- [3] **Wachira M. Charles**, Lawi O. George and J. Malinzi, *A Spatiotemporal Model on the Transmission Dynamics of Zika Virus Disease* Asian Research Journal of Mathematics 10(4): 1-15, 2018; Article no.ARJOM.43944 ISSN: 2456-477X.
- [4] H.O.Nyaberi and **C.M. Wachira**, *Mathematical modeling of COVID-19 transmission dynamics with Social Distance as an Intervention* I. J. Math. Comput. Sci. 10 (2022), No. 8(2), 4-13.

- [5] **C.M.Wachira**, G. O. Lawi and L.O. Omondi, *Sensitivity and Optimal Control Analysis of an Extended SEIR COVID-19 Mathematical Model*, Journal of Applied Mathematics, Volume 2022, Article ID 1476607, 9 pages. <https://doi.org/10.1155/2022/1476607>
- [6] **C.M.Wachira**, G. O. Lawi and L.O. Omondi, *Travelling Wave Analysis of a Diffusive COVID-19 Model*, Journal of Applied Mathematics, Volume 2022, Article ID 6052274, 7 pages. <https://doi.org/10.1155/2022/6052274>

## Conferences, Workshops, Seminars and Summer-schools

- March 2024 The *7<sup>th</sup> African Council for Distance Education Conference 2024*, held at Masinde Muliro University of Science and Technology (MMUST) from 26<sup>th</sup>- 28<sup>th</sup> March, 2024.
- June 2023 *1<sup>st</sup> African STACK conference for Undergraduate Mathematics*, held at Masinde Muliro University of Science and Technology (MMUST) from 19<sup>th</sup>- 23<sup>rd</sup> June, 2023.
- March 2023 *Volkswagen Sponsored Summer School on Biostatistics and Biomathematics*, held at Eldoret, Kenya 13<sup>th</sup> – 25<sup>th</sup> March, 2023. I presented a contributive talk on; *Infectious Disease Models: Spatial-temporal Analysis Approach with Application to COVID-19*
- July 2022 *STACK Training*, held at Maseno University, Kenya. 4<sup>th</sup> – 8<sup>th</sup> July, 2022
- Feb. 2019 *Grant Proposal Writing Workshop*, held at Masinde Muliro University of Science and Technology on 28<sup>th</sup> February, 2019.
- Dec. 2018 *Postgraduate Research Findings Seminar - Melting Point*, held at Masinde Muliro University of Science and Technology on December 2018.
- Oct. 2018 *Workshop on Module Writing and Moodle training*, held at Masinde Muliro University of Science and Technology on 17<sup>th</sup> - 20<sup>th</sup> October, 2018.

## Community Outreach/Service

- March 2010 Volunteer Tutor and Academic Advisor in Science and Mathematics, Kabiru- ini Secondary School
- 2016-to 2022 - Member of St. Sebastian, Mary Seat of Wisdom, MMUST Chaplaincy
- 2023 – April 2024 - Bible Study-Dad of Holy Cross Bible study, Mary Seat of Wisdom, MMUST Chaplaincy
- 2019-to Date - Reviewer in various Journals of Mathematics and Statistics
- Jan 2023 -Dec- Facilitating the mathematics strand of the STEM project-MMUST Mini-2024 STEM Centre.

## Professional Membership

- 2018-to Date Member of the Kenya Mathematical Society (KMS).
- 2011-2015 Member of the Mathematics Students Association of MMUST.

## Computer Packages and Software Skills

- Microsoft Office, WordPress, Excel and Desktop Publisher.
- AutoCAD level I & II, Typing in Latex, ERP System, Learning Management System (LMS) and Moodle
- Data Analysis using SPSS, STATA, MATLAB, and R programs.

## Honors and Awards

2015 Certificate of Merit, MMUST, 2015 (Awarded to the graduating student with the highest GPA, in the Department)

2020 Ph.D Merit Scholarship Award - to pursue Ph.D degree in Applied Mathematics at Masinde Muliro University of Science and Technology

## Hobbies

- Tour and Travelling, Reading novels, Newspapers Articles, and Debating clubs.

## Languages

**English** Fluent Speaker, Advanced Reading and Writing

**Kikuyu** Fluent Speaker

**Swahili** Fluent Speaker, Advanced Reading and Writing

## Referees

- [1] **Dr. Frankline Tireito**, Senior Lecturer, Mathematics Department, MMUST, P.O. Box 190-50100, Kakamega, Kenya, Tel: +254720515162  
Email:ftireito@mmust.ac.ke
- [2] **Dr. David Angwenyi**, Senior Lecturer, Mathematics Department, MMUST, P.O. Box 190-50100, Kakamega, Kenya Tel: +254706908474.  
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