

CURRICULUM VITAE

DR. JACINTA MUKONYO MUTWIWA, PhD
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PERSONAL DETAILS

NATIONALITY : Kenyan
ID NUMBER : 28810307
PASSPORT NUMBER : BK119324
KRA PIN NUMBER : A006556426A
DATE OF BIRTH : 1st Sept, 1991
SEX : Female
RELIGION : Christian
MARITAL STATUS : Single

CAREER OBJECTIVE

To pioneer applied mathematical research that translates into tangible solutions for African public health and educational challenges.

RESEARCH INTEREST

- Mathematical Modelling for Energy Systems and Sustainability
- Social-Epidemiological Modelling (Stress, Mental Health Dynamics)
- Renewable Energy Optimization and Simulation
- Biomathematics and Epidemiological Modelling
- Systems Biology and Public Health Modelling
- Nonlinear Dynamics and Applied Statistics

COMPETENCY PROFILE

A Self-motivated, honest and dynamic personality who trusts in team work. An enthusiastic and committed individual who accepts correction and utilizes the same as an opportunity to improve on job performance and research.

CAREER SUMMARY

December 2023 –: Date: **Lecturer**, Department of Mathematics, Kibabii University

Key Responsibilities:

- Teaching and examining undergraduate and postgraduate students in mathematics.
- Conducting research and publishing in peer- reviewed journals
- Administering, supervising and marking examinations and continuous assessment tests.
- Participating in departmental meetings, committees and academic governance.
- Mentoring and supervising postgraduate students.
- **Class advisor** for BSc. Mathematics third years.
- Advising students on academic matters and professional development.

July 2020 –: December 2023: **Tutorial Fellow**, Department of Mathematics, Kibabii University

Key Responsibilities:

- Teaching and examining undergraduate students in mathematics.
- Administering, supervising and marking examinations and continuous assessment tests.

- **Class advisor** for BSc. Mathematics first years.
- Advising students on academic matters.

Sept 2019 – June 2020: **Graduate Assistant**, Department of Mathematics, Kibabii University

Key Responsibilities:

- Teaching and examining undergraduate students in mathematics under supervision.
- Administering, supervising and marking examinations and continuous assessment tests under supervision.

2017 – August 2019: **Part time diploma instructor**, Kibabii University

Key Responsibilities:

- Teaching and examining diploma students in mathematics.
- Administering, supervising and marking examinations and continuous assessment tests.

EDUCATION BACKGROUND

Institution: Kibabii University (KIBU)
Certificate: **Doctor of Philosophy in Applied Mathematics** **Date:** 2020 – 2023
Thesis topic: *A coupled mathematical model for cervical cancer incorporating diffusion and diagnosis*

Institution: Kibabii University (KIBU)
Certificate: **Masters of Science in Applied Mathematics** **Date:** 2016 – 2019
Thesis topic: *Mathematical modelling of the role of interference on the transmission dynamics and management of HIV and AIDS*

Institution: Masinde Muliro University of Science and Technology (MMUST)
Certificate: **Bed (Arts). Mathematics and Business studies**
Date: 2012 – 2015 **Grade:** First Class honours

Institution: Kiu Secondary School **Date:** 2007–2010
Certificate: Kenya Certificate of Secondary Education (KCSE) **Grade:** B

Institution: Uvunye Primary School **Date:** 1999 – 2006
Certificate: Kenya Certificate of Primary Education (KCPE) **Marks:** 299

Appointments and responsibilities

August 2025 – Present: Appointment as Coordinator Linkages and International Affairs

Key Responsibilities:

- Coordinate Linkages and International Affairs initiatives within and outside the university;
- Ensuring that the Linkages and International Affairs Policy and its management strategies are implemented;
- Preparing and ensuring that Linkages and International Affairs work plan and budget are developed, reviewed and recommended for approval;

- Initiating and Co-ordinating International student and staff exchange programmes;
- Mobilizing resources for quality internship placement and industry linkages;
- Identifying documents and sharing the best practices related to Linkages and International Affairs;
- Establishing and regularly updating database on Linkages and International students, and
- Performing any other responsibility as may be assigned or delegated by the Director, Partnership and Linkages in accordance with the Kibabii University Statutes.

June 2025 – July 2025: Appointment as Warden

Key Responsibilities:

- Managing student's administration in their areas of residence
- Proving parental supervisions and guidance in both academic and social aspect to students in their residence and help create a sense of 'The Family' atmosphere
- Facilitating and assisting in providing academic advice and counselling services
- Overseeing room and general cleaning in the halls. Students are expected to keep their rooms clean at all times
- Developing a sense of identity, belonging and community life within the areas of residence
- Maintaining discipline and friendly atmosphere in the areas of residence
- Co-ordinating competitions at residence level e.g sports, debate, drama etc
- Handling emergencies in the areas of residence should need arise
- Training students on safety procedures
- Creating a sense of responsibility among students
- Assisting in orientation of first year students
- Assisting in coaching, mentoring and developing

February 2024 – Present: Appointment as part time and applied mathematics coordinator

Key Responsibilities:

- Ensuring that the part time lecturers receive their appointment letters
- Ensuring proper filling of the claim forms before processing
- Liaising with the relevant offices for part time payment processing
- Attending part time processing meetings
- In charge of applied mathematics in the department

July 2023: Appointment as committee member to short listing committee

Key Responsibilities:

- Make summaries of the applications for the positions listed using the prescribed format
- Come up with shortlisting criteria to be used in shortlisting applications
- Verify the authenticity of copies of certificates and other documents submitted by applicants
- Consider and shortlist applicants for the listed positions
- Make and submit reports of the shortlisting exercise to the office of the registrar (Administration and Human Resource)
- Submit report by Friday 28th July 2023

February 2022 – Present: Appointment as committee member to gender mainstreaming committee

Key Responsibilities:

- Promoting the integration of the National Policy on Gender and Development 2019 policies and programs of the organization

- Building the capacity of officers at all levels of the organization on gender
- Sensitizing organization's stakeholders on gender
- Monitoring the implementation of programs to ensure gender responsiveness and conformity with SDGs
- Monitoring the organization's compliance with access to Government procurement opportunities (AGPO)
- Monitoring compliance with the 2/3 gender principle in recruitment, training, promotion and appointment to committee, boards, councils or commissions.
- Promoting the generation, collection and management of gender disaggregated data to inform planning and programming
- Promoting the review and development of policies and programs on Gender Based violence
- Monitoring the implementation of international and regional obligations Kenya is signatory to and contributing to the development of reports to the treaty monitoring entities
- Working with development parties/civil society organizations in the implementation of gender related initiatives
- Writing proposals to seek support for gender related initiatives in the organization
- Undertaking relevant research to inform future planning and programming
- Reporting to the National Gender and Equality Commission (NGEC) on the organization's achievements and challenges with copies of the report to the State Department for Gender

September 2021 – August 2024: Appointment as co-patron Kibabii University catholic community

Key Responsibilities:

- Adviser of the association
- Facilitate amicable contact between the association, administration and the community
- Be informed of the associations undertakings upon accrual
- Mobilize funds and resources for development
- Act as an observer during KUCC elections
- Play any other role as may be seen fit and agreed upon by the executive.

International Engagements		
Period	Sponsor	Hosting Institution
June 21-25, 2026	ISSBD Pre-conference Workshop and Biennial Meeting (ISSBD Early Career Scholar Grant)	Incheon, South Korea
October 14-16, 2025	3 rd Busitema University Science, Technology and Innovation Symposium (BUSTIC 2025) - Best Overall Presenter	Mbale City, Uganda
March 26-27, 2025	International Conference on Advances in Applied Mathematics and Mathematical (ICAAMMP -25)	Johannesburg, South Africa

Completed Supervision			
S/No.	Student	Title	Level
1	Caren Mutonyi	Mathematical Modeling and Equilibrium Analysis of Early Life Stress Using a Modified SEIR Framework	MSc in Applied Mathematics
2	Dennis Achayo	Mathematical Modelling of a Tuberculosis Model Incorporating Vaccination, Treatment, and Re-infection	MSc in Applied Mathematics

Ongoing Supervision			
S/No.	Student	Title	Level

1	Truphenah Andeyo Oyolo	Mathematical Modelling of the Impact of Lifestyle Modification on Cardiovascular Risk and Disease Progression with Re-infection	MSc in Applied Mathematics
2	Wekesa Joy Nanjala	Modelling the Interdependent Dynamics of Substance Abuse and Mental Stress in Unemployed Population	MSc in Applied Mathematics
3	Fednant Okware	Modelling of Tuberculosis-Mpox Co-infection Dynamics Integrating Environmental Factors with Optimal Control Analysis	PhD in Applied Mathematics

Grants and Funds Attracted

Period	Funds Attracted	Amount	Funding Organization
2026	ISSBD Early Career Scholar Travel Grant to attend the Pre-Conference Workshop and Biennial Meeting in Incheon, South Korea. The grant includes a registration fee waiver (USD 130), international airfare, and a subsistence allowance (USD 1000).	USD 1,130 (cash equivalent) + airfare	International Society for the Study of Behavioural Development (ISSBD)
2026	AIMS-Carnegie Research Fellowship (USD 10,000) – 12-month fellowship in Data Science under African Diaspora Research Chair Program. One-month residency in Kigali, Rwanda	USD 10,000	AIMS RIC / Carnegie Corporation
2021	CEMA Fellowship Award on Applied Epidemiological Modelling	Full Fellowship	CEMA, University of Nairobi

PUBLICATIONS IN REFEREED JOURNAL

- T. M, Caren, Mutwiwa J. M, and Mulambula A. 2025. “Mathematical Modeling and Equilibrium Analysis of Early Life Stress Using a Modified SEIR Framework”. *Asian Research Journal of Mathematics* 21 (7):21-31. <https://doi.org/10.9734/arjom/2025/v21i7955>.
- Mutwiwa, Jacinta M. 2025. “A Mathematical Model of Cardiovascular Disease Dynamics Incorporating Personal Risk Factors”. *Asian Journal of Probability and Statistics* 27 (6):74-83. <https://doi.org/10.9734/ajpas/2025/v27i6768>.
- Mutwiwa, Jacinta M., and Mulambula Andanje. 2025. “Mathematical Model of Cervical Cancer Incorporating Prevention Measures Against the Disease”. *Asian Research Journal of Mathematics* 21 (6):30-42. <https://doi.org/10.9734/arjom/2025/v21i6940>
- Samuel B. Apima, Jacinta M. Mutwiwa, Isaac K. Barasa, An SVEIR COVID-19 Mathematical Model with Double Dose Vaccination , *Asian Research Journal of Mathematics*,(2024), 20, 92-101
- Mutwiwa, J. M.,and Apima, S. B. (2023). **Mathematical Analysis of HPV and Cervical Cancer Model in the Presence of Protection**. *Asian Research Journal of Mathematics*, 19(8), 1-11.
- Mutwiwa, J. M. (2023). **Between Host Model for Cervical Cancer Incorporating Diagnosis**. *Asian Research Journal of Mathematics*, 19(4), 39-50.
- Jacinta M. Mutwiwa, Joyce K. Nthiiri, Boniface O. Kwach and Barack O. Abonyo. ‘**A Coupled Mathematical Model for Cervical Cancer Incorporating Diffusion and Diagnosis**’ (2022). *IOSR Journal of Mathematics (IOSR-JM)* e-ISSN: 2278-5728, p-ISSN: 2319-765X. Volume 18, Issue 4 Ser. III (Jul. – Aug. 2022), PP 01-09 www.iosrjournals.org
- Jacinta M. Mutwiwa, Joyce K. Nthiiri, Boniface O. Kwach and Barack O. Abonyo. (2022) ‘**Within Host Model for Cervical Cancer Incorporating Diffusion**’ *IOSR Journal of Mathematics (IOSR-JM)* e-ISSN: 2278-5728, p-ISSN: 2319-765X. Volume 18, Issue 4 Ser. II (Jul. – Aug. 2022), PP 46-55 www.iosrjournals.org

- Apima, S. B., and Mutwiwa, J. M. **An SEIQR Mathematical Model for the Spread of COVID-19.** (2021)
- Mutwiwa, J. M., Nthiiri, J. K., & Kwach, O. **Mathematical modelling of the role of interference on the transmission dynamics and management of Hiv and Aids**. *Journal of Advances in Mathematics and Computer Science*. 2018/ 09/22 .28(6): 1-11; Article no. JAMCS.42819 ISSN: 2456-9968

CONFERENCE ATTENDED

- Jacinta M. Mutwiwa (2025), **Mathematical Modelling of Cervical Cancer Incorporating Protection against Infection**, International Conference on Advances in Applied Mathematics and Mathematical (ICAAMMP -25), 26th - 27th March 2025, Johannesburg, South Africa.
- Jacinta M. Mutwiwa and Samuel B. Apima (2023) **An SVEIR Covid-19 mathematical model with double dose vaccination**, Kibabii University 6th International Conference, 14th – 15th June, 2023, Kibabii University, Bungoma, Kenya
- Samuel B. Apima and Jacinta M. Mutwiwa (2019) **A SEIR model for the spread of influenza**, Kibabii University 4th International Conference, 12th – 14th June, 2019, Kibabii University, Bungoma, Kenya

WORKSHOPS, TRAININGS & SEMINARS ATTENDED

- Trainer of Trainers (TOTs)- Strengthening Teacher Professional Development and Mentorship workshop, 5th – 8th April 2025, Farm view hotel, Busia County, Kenya.
- Kibabii University 6th International Conference, 14th – 15th June, 2023, Kibabii University, Bungoma, Kenya
- Strengthening in-service teacher mentorship and support workshop, 13th – 17th June 2022, Farm view hotel, Busia, Kenya.
- Gender mainstreaming training, 27th – 29th October, 2021, Kibabii University, Bungoma, Kenya
- *CEMA 2-week intensive course on Mathematical Modelling for Infectious Disease Dynamics, 12th – 23rd July, 2021, University of Nairobi, Kenya.*
- Designing blended courses in moodle, 16th Nov – 4th Dec, 2020, Kibabii University, Bungoma, Kenya
- Kibabii University 4th International Conference, 12th – 14th June, 2019, Kibabii University, Bungoma,
- Educational workshop, 23rd – 24th October 2018, Kibabii University, Bungoma, Kenya.

HONORS/AWARDS

- ❖ 2025: Best Overall Presenter – 3rd Busitema University Science, Technology and Innovation Symposium (BUSTIC 2025), Mbale, Uganda.
 - ❖ 2021: CEMA Fellowship award on Applied Epidemiological, Modelling at the University of Nairobi
 - ❖ 2010: Outstanding Student in Kiongwani Mathematics Contest, Attained position three

KEY I.T SKILLS

- Mathematical and Statistical Softwares (Matlab, Mathematica, LaTeX)
- Microsoft office packages (MS Word, MS Excel, MS PowerPoint)

COMMUNITY SERVICE

- Nominated Board Member, St. Peters Mumias Boys National School, Kakamega County. (April 2025- Date)
- Nominated Board Member, St. Andrian Kiongwani Boys High School, Makueni County, Kenya. (April 2025- Date)
- Nominated Board Chair (BOM Chair), Uvunye secondary school, Makueni County. (2022- DATE)
- Matron, Kibabii University Catholic Community, Bungoma County. (2021-2025)
- Nominated Board member (BOM), Uvunye secondary school, Makueni County. (2019-2022)
- Nominated Board of member (BOM), Uvunye Primary School, Makueni County. (2017-2019)

AFFILIATIONS

- Member, Kenya National Statistical Society (KNSS), 2020 - present
- Member, Association of Women in Science, 2023 - present
- Member, Applied Malaria Modeling Network (AMMnet) 2024–present

REFEREES

Dr. Joyce Kagendo Nthiiri,

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