

Rebecca Muhumuza Nalule CV

1. PERSONAL INFORMATION

First Name: Rebecca
Given Name: Muhumuza
Last Name: Nalule
Marital Status: Married
Physical Address: 256, Tororo, Uganda

Nationality: Ugandan
Religion: Born again
District of Birth: Kampala
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https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Nalule+rebecca+muhumuza&btnG=

1. CURRENT ACADEMIC APPOINTMENT

Senior Lecturer, Department of Mathematics, Busitema University.

2. EDUCATION BACKGROUND

<u>Period</u>	<u>Institution</u>	<u>Qualification</u>
<u>2017-2022</u>	<u>Makerere University</u>	<u>Ph.D</u>
<u>2004-2006</u>	<u>Makerere University</u>	<u>Master of Mathematics degree</u>
<u>1998-2001</u>	<u>Makerere University(ITEK)</u>	<u>Bachelor of Education degree</u>
<u>1991-1993</u>	<u>Kyambogo Teacher education</u>	<u>Diploma in Education</u>
<u>1997-1991</u>	<u>Kitante Hill School</u>	<u>U.A.C.E</u>
<u>1980-1989</u>	<u>Kitante Hill School</u>	<u>U.C.E</u>

3. RESEARCH INTERESTS

1. Mathematical and Statistical Modelling
2. Infectious Disease Dynamics

3. Bayesian Inference and Data Analysis
4. Computational Fluid Dynamics (CFD)
5. STEM Education and Higher Education Policy

4. WORKING EXPERIENCE

2024-Date	Busitema University	Senior Lecturer
2009-2023	Busitema University	Lecturer
2009-2009	Uganda Christian University	Part-Time university
2007-2009	Kyambogo University	Part-Time Lecturer
2012-2016	Uganda Mathematical society LTD	Treasurer
1996-2007	Luteete Secondary School	Teacher Mathematics

5. TEACHING EXPERIENCE

Undergraduate

1. Calculus
2. Differential Equations
3. Probability Theory
4. Numerical Analysis
5. Real Analysis
6. Linear programming
7. Number Theory
8. Dynamical Systems
9. Statistical Inference
10. Abstract Algebra
11. Linear Algebra

Post graduate

12. Dynamical System
13. Research Methodology

6. POST GRADUATE SUPERVISION (COMPLETED)

1. Nekesa Diana – 2024
2. Onyami Lawrence – 2025
3. Izinga Samuel – 2025
4. Emulu Emmanuel – 2025
5. Namuyindi Latifah – Defended (Feb 2026)
6. Ssonko Paul – 2025
7. Abdinasar Ali – 2025

7. COMMUNITY ENGAGEMENT & OUTREACH

Women in Mathematics mentorship programs

Math marathon (RUN4Math9) (March, 14, 2025)

Mathematics Camp January, 4-8, 2026, Budo Junior School

STEM outreach activities in secondary and Primary schools.

- Kayunga primary school 2025
- Nakaseke International school

- Makindye Secondary school
- Trinity College school, Nabbingo

8. Academic leadership in national mathematics networks

Conferences & Workshops

Busitema University Science, Technology and Innovation Symposium (USTIS 2025)

ASMDA & Demographics Conference, Florence, Italy (2019)

International Conference on Stochastic Processes, Sweden (2019)

10. Awards

Sida Bilateral PhD Scholarship (2017–2022)

11. Professional Memberships

Uganda Mathematical Society; Organization for Women in Science for the Developing World (OWSD); Eastern Africa Network for Women in Basic Sciences (EANWoBAS)

PUBLICATIONS:

PUBLICATIONS AFTER PROMOTION TO SENIOR LECTURER

Mohammed, N., Jeevanandham, K., Ramalingam, A., Maheswari, R., Dhandapani, P. B., & Nalule, R. Rao, M. A., Jaradat, E. K., Devi, M. P., Dhandapani, P. B., Nalule, R. M., & Al-Hmoud, M. (2026). Hybrid modeling and forecasting of COVID-19: Integrating SEAIQHRD and GPR for improved predictions. *BMC Infectious Diseases*, 26, Article 12494.

<https://doi.org/10.1186/s12879-025-12494-x>

M. (2025). Quantum Extensions of Widder's Formula via q-Deformed Calculus. *Journal of Applied Mathematics*. 2025(1) 5525705

<https://onlinelibrary.wiley.com/share/GDQKXKPZ6ZUASPSIDUTC?target=10.1155/jama/5525705>

Rao, M. A., Jaradat, E. K., Devi, M. P., Dhandapani, P. B., Nalule, R. M., & Al-Hmoud, M. (2025). Modeling COVID-19 pneumonia and COVID-associated pulmonary aspergillosis: sensitivity analysis and optimal control. *BMC Infectious Diseases*. 25(1) 1192.

<https://doi.org/10.1186/s12879-025-11606-x>

Onyami, L., Nalule, R. M., Mbabazi, F. K., & Muhumuza, A. K. (2025). CFD Analysis of Pressure and Velocity Profiles in Stenosed Carotid Arteries at Varying Degrees of Occlusion *Open Journal of Fluid Dynamics*. 13(4) 207--221

<https://doi.org/10.4236/ojfd.2025.154012>

Kobusingye, S., Ssemwogerere, T., Muhumuza, A. K., & Nalule, R. M. (2025). Optimizing the Efficiency of Agricultural Direct Solar Dryers using Computational Fluid Dynamics. *International Journal of Engineering Research & Technology (IJERT)*. 14 (6) ISSN: 2278-0181

<https://doi.org/10.5281/zenodo.18104636>

Ali, A. D., & Nalule, R. M. (2025). Bayesian Modeling of Antenatal Care Utilization and Key Maternal Risk Factors in Mogadishu, Somalia

Science.13(3) 123--133.

<https://doi.org/10.11648/j.sjph.20251303.13>

Nekesa, D., Nalule, R. M., Kyomuhangi, A., Muhumuza, A. K., & Oyem, A. O. (2024). Optimization of Heat Transfer in Cassava Flour based Cake Baking: A Computational Fluid Dynamics Approach. *WSEAS Transactions on Heat and Mass Transfer*. 19, 107--113. <https://doi.org/10.37394/232012.2024.19.12>

Muhumuza, R. N., Nalule, R. M., Kyomuhangi, A., Mbabazi, F. K., Mwasu, A., Kadedesya, S., Nabirye, T., Nanyondo, J., Wamakote, L., & Muweesi, C. and others (2024). INTEGRATING STEM EDUCATION IN UGANDA'S HIGHER EDUCATION TO PRODUCE SKILLS REQUIRED TO STIMULATE INDUSTRIALISATION AND SUSTAINABLE ECONOMIC GROWTH. THE UGANDA HIGHER EDUCATION REVIEW Учредители: *National Council for Higher Education*. 12 (1) 13--30. <https://doi.org/10.58653/nche.v12i1.2>

Marjorie Sarah Kabuye and Nannyonga, Betty K and Nalule, Rebecca M and Mbabazi, Fulgensia K and Kyomuhangi, Annet and Mbabazi, Doreen S and Namusoke, Sylvia S and Namugaya, Jalira and Taliba, Caroline and Nakakawa, Juliet N (2023), Factors related to teenage pregnancy during the COVID-19 pandemic Springer Nature

Muhumuza, Asaph Keikara and Muhumuza, Rebecca Nalule and Kumar, Santosh (2022). Extreme-Fixed Points of the Vandermonde Polynomial when Optimized over p-Normed Surfaces Defined by Univariate Polynomials. *Konuralp Journal of Mathematics*. 10(2) 355--367

Bodnar, O., Muhumuza, R. N., & Possolo, A. (2020). Bayesian inference for heterogeneity in meta-analysis. *Metrologia*, 57(6), 064004.

Muhumuza, R., & Bodnar, O. (2020). On modeling the correlation as an additional parameter in random effects model. *Theory of Probability and Mathematical Statistics*.

Muhumuza, R. N., Bodnar, O., Nzabanita, J., & Nsubuga, R. N. (2020). Determining influential factors in spatio-temporal models. In *Demography of Population Health, Aging and Health Expenditures* (pp. 347-357). Springer, Cham

Muhumuza, R. N., Bodnar, O., Nzabanita, J., & Nsubuga, R. N. (2020). Determining influential factors in spatio-temporal models. In *Demography of Population Health, Aging and Health Expenditures* (pp. 347-357). Springer, Cham.

Muhumuza, R. N., Bodnar, O., Nzabanita, J., & Nsubuga, R. N. (2020). Determining influential factors in spatio-temporal models. In *Demography of Population Health, Aging and Health Expenditures* (pp. 347-357). Springer, Cham

ADMINISTRATIVE & LEADERSHIP ROLES

Chairperson (Activities), Association of Women Mathematicians Uganda
Coordinator, RUN4Math9 – International Day of Mathematics (2025)
Departmental Timetable Representative, Faculty of Science and Education
Treasurer, Uganda Mathematical Society (2012–2016)

8. Community Engagement & Outreach

Women in Mathematics mentorship programs; STEM outreach in secondary schools; academic leadership in national mathematics networks.

CONFERENCES AND WORKSHOPS ATTENDED AND PRESENTED

1. The 3rd Busitema University Science, Technology and Innovation Symposium USTIS2025

2The 18th Conference of Applied Stochastic Models and Data Analysis International Society and Demographics2019 Workshop. 11-14 June 2019, Florence, Italy (Grand Hotel Adriaco)

3 International Conference on Stochastic Processes and Algebraic Structures from theory Towards Applications, Västerås, Sweden, September 30 - October 2, 2019.

4 Strengthening Research and Postgraduate Training

Mathematics in universities in Africa, Bishoftu, Ethiopia, August 5-6, 2019.

5 Third networking and building future network- SIDA-ISP 2018. Theme: Strengthening Research in Mathematics in Universities with Sida-ISP support 20th to 24th August 2018, Entebbe, Uganda

3rd Conference on Inverse Problems in Africa School on 6th – 10th and 13th – 15th November 2017 held at Makerere University

African Doctoral academy: BECOMING A LECTURER: TEACHING AND LEARNING IN HIGHER EDUCATION 2018.

Faculty of Science and Education Busitema University writing Retreat July 3-8 2022.
IPMS-APREA Scientific workshop 18th- 21st July 2022 UTALI HOTEL Nairobi

AWARDS ATTAINED.

Sida Bilateral Programme for Capacity Building Project number 306 Ph.D Scholarship 2017-2022.

CERTIFICATES OF PARTICIPATION

1. ASMDA 2019- Demographics 2019.
2. Scholarly writing and communication
3. Information competence and management
4. Advanced Research and Methods
5. Philosophy of methods
6. Teaching and Learning in the 21st Century from 4th to 8th October 2013 by the African Doctorial Academy.
7. Treasurer Uganda Mathematical Society 2012-2016
8. Capacity Building Training organized by Eastern Africa for Women in Basic Sciences

COURSES TAUGHT

I have taught a number of courses in the Department of Mathematics at all levels. To mention a few are the following.

YEAR I: Calculus1, Elements of Mathematics, Linear algebra, Elements of Probability and statistics.

YEAR II: Probability theory, Differential Equations, Real Analysis1, Numerical Analysis1 and abstract algebra, School practice supervision.

YEAR III: Number Theory, Dynamical systems, Mathematics Education, Statistical Inference

Masters: Dynamical Systems, Research Methodology

OUTREACH ACTIVITIES:

1. Chair activities Association of Women Mathematicians 2017 to date
2. Node coordinator Eastern Africa Network for Women in Basic Sciences (EANWoBAS) 2017 to date
3. Vice Chairperson Liberty Worship Centre Investments Cooperative Society limited (LIWICS).
4. Member of The Uganda Mathematical Society LTD(UMS)
5. Member of the Organization for women in Science for Developing World (OWSD)
6. Usher Liberty Worship Center International. Lugala.

SKILLS

1. Teaching and learning in higher education
2. Scholarly writing and Communication Skills
3. Data Analysis
4. Information Competence and Management

HOBBIES.

Researcher, Mentoring, guidance and counselling, gospel music, farming.

REFERENCES.

Prof. Olha Bodnar,
School of Statistics and Economics Orebro University, Sweden
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Dr. Rebecca N Nsubuga, senior researcher nrebeccansubuga@gmail.com

Prof. John Mango Magero, Makerere University mango@cns.mak.ac.ug