

Prof. Baba Seidu (PhD)

Curriculum Vitae

CURRENT ADDRESS

🏠 Department of Mathematics
School of Mathematical Sciences
C. K. Tedam University of Tech. & Applied Sciences
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PERMANENT ADDRESS

Vunania, Navrongo
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SCHOLARLY PROFILES

- **CKT-UTAS Staff Profile:** <https://staffweb.cktutas.edu.gh/staff.php?staff-name=Baba&serial=Seidu>
- **Google Scholar:** <https://scholar.google.com/citations?user=6ej5w7cAAAAJ&hl=en&oi=ao>
- **Web of Science/Publons:** <https://www.webofscience.com/wos/author/rid/AFL-8051-2022>
- **Scopus:** <https://www.scopus.com/authid/detail.uri?authorId=24068080100>
- **ResearchGate:** https://www.researchgate.net/profile/Baba-Seidu?ev=hdr_xprf
- **ORCID:** <https://orcid.org/0000-0001-5652-2690>
- **SciProfiles:** <https://sciprofiles.com/profile/2680882>
- **Loop Profile:** <https://loop.frontiersin.org/people/1917515/overview>

EDUCATION

- 2023 **Bachelor of Arts**
Islamic Studies
International Online University
- 2016 **Doctor of Philosophy**
Computational Mathematics
University for Development Studies, Ghana
- 2010 **Master of Science**
Mathematics
Kwame Nkrumah University of Science and Technology
- 2006 **Bachelor of Science**
SECOND CLASS UPPER
Mathematical Sciences
University for Development Studies, Ghana

2001 **WASSCE, General Science**
Nalerigu Senior High School, Ghana

1998 **Basic Education Certificate**
Presbyterian Junior Secondary School
Gambaga, North East Region, Ghana

WORK EXPERIENCE

Jul 2023–Date **Professor**
Department of Mathematics, School of Mathematical Sciences
C. K. Tedam University of Technology and Applied Sciences, Navrongo, Ghana

Jul 2021–2023 **Associate Professor**
Department of Mathematics, School of Mathematical Sciences
C. K. Tedam University of Technology and Applied Sciences, Navrongo, Ghana

2020 – Jun 2021 **Senior Lecturer**
Department of Mathematics, School of Mathematical Sciences
C. K. Tedam University of Technology and Applied Sciences, Navrongo, Ghana

2017 – 2020 **Senior Lecturer**
Department of Mathematics, Faculty of Mathematical Sciences
University for Development Studies, Tamale, Ghana

2010 – 2017 **Lecturer**
Department of Mathematics, faculty of Mathematical Sciences
University for Development Studies, Tamale, Ghana

2007 – 2010 **Senior Research Assistant**
Department of Mathematics, Faculty of Applied Sciences
University for Development Studies, Tamale, Ghana

2008 **Course Demonstrator**
Department of Mathematics, College of Science
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

COURSES TAUGHT

Undergraduate

Introduction to Mechanics; Discrete Mathematics;
Introductory Topology; Functional Analysis;
Partial Differential Equations; Mathematical Modelling
and Applications.

Postgraduate

Matrix Theory; Numerical Analysis;
Mathematical Software and Applications;
Ordinary Differential Equations;
Partial Differential Equations;
Mathematical Methods.

RESEARCH INTERESTS

- Mathematical Epidemiology
- Performance Measurement.
- Computational Mathematics.

COMPUTER SKILLS

INTERMEDIATE Maple, Mathematica, Python
EXPERT Microsoft Office, MATLAB, \LaTeX

ADMINISTRATIVE EXPERIENCE

1. Vice Dean, School of Mathematical Sciences, CKT-UTAS, 1st February 2021-Date
2. Head of Mathematics Department, 2020– 2021
3. Campus Coordinator, TTFPP, 2018-2020
4. Faculty Coordinator, TTFPP, 2017–2020
5. BSc Mathematics Course Coordinator, 2017-2020
6. Served on over 15 committees/boards in the University.
7. Reviewer for a number of reputable Journals
8. Supervised several MPhil and PhD theses.
9. Examined, several PhD and MPhil theses.
10. Currently supervising three (3) MPhil and four (4) PhD students.

COMMITTEES AND BOARDS SERVED

1. **Member**, Administrative Manual Draft Committee, C. K. Tedam University of Technology and Applied Sciences, 2022
2. **Chairman**, Examinations Malpractice Committee, School of Mathematical Sciences, C. K. Tedam University of Technology and Applied Sciences, 2021
3. **Chairman**, Committee for review of Appointments and Promotion guidelines, C. K. Tedam University of Technology and Applied Sciences, 2021
4. **Member**, Academic Board, C. K. Tedam University of Technology and Applied Sciences, October 2020–Date
5. **Member**, Executive committee, School of Mathematical Sciences, C. K. Tedam University of Technology and Applied Sciences, Oct. 2020– Date.
6. **Member**, Graduate Students' Handbook Draft Committee, C. K. Tedam University of Technology and Applied Sciences, 2021
7. **Member**, Appointments and Promotion Committee, School of Mathematical Sciences, C. K. Tedam University of Technology and Applied Sciences, Oct 2020–Date.
8. **Member**, Board of School of Postgraduate Studies and Research, C. K. Tedam University of Technology and Applied Sciences, 2021–Date
9. **Cognate Member**, Appointments and Promotion Committee, School of Computing and Information Sciences, 2021-Date
10. **Chairman**, Mathematics Department board, C. K. Tedam University of Technology and Applied Sciences, 1st October 2020– 31st January 2021
11. **Member**, Appointments and Promotion Committee, School of Mathematics Sciences, C. K. Tedam University of Technology and Applied Sciences, 1st Oct. 2020– 31st Jan. 2021
12. **Member**, School Board, School of Mathematics Sciences, C. K. Tedam University of Technology and Applied Sciences, 2020-Date

13. **Chairman**, Committee on Credit rating of Student Research Supervision, C. K. Tedam University of Technology and Applied Sciences, 2020
14. **Chairman**, Mathematics Department Re-accreditation Committee, University for Development Studies, 2018-2020.
15. **Member**, Journal Development Committee, UDS, Faculty of Mathematical Sciences, 2018.
16. **Member**, Third Trimester Field Practical Program(TTFPP) Restructuring Committee, University for Development Studies, Faculty of Mathematical Sciences, 2017.
17. **Member**, Department Graduate Advisory Board, University for Development Studies, Mathematics Department, 2019–2020.
18. **Chairman**, CKT-UTAS Welfare policy draft Committee, 2020
19. **Member**, Department Undergraduate Project work review Committee, University for Development Studies, Mathematics Department, 2017 - 2020
20. **Member**, Examination Moderation Committee, University for Development Studies, Mathematics Department, 2017-2020
21. **Member**, Post-Examination Moderation Committee, University for Development Studies, 2019-2020
22. **Member**, Departmental Curriculum Review Committee for re-accreditation of BSc Mathematics Program, 2015.
23. **Member**, Campus Board, Navrongo campus, University for Development Studies, 2018-2019.

OTHER RESPONSIBILITIES

1. **Facilitator**, Training of Final year undergraduate students on the use of \LaTeX , 2020.
2. **Facilitator**, Training of District Coordinators for Third Trimester Field Practical Program (TTFPP), University for Development Studies, 2018-2020
3. **Facilitator**, Training of TTFPP assessment teams, University for Development Studies, 2018-2020
4. **Facilitator**, Training of Postgraduate students on the use of \LaTeX , 2018.
5. **Vice-President**, UTAG, CKT-UTAS, 2020
6. **Patron**, Mathematics Students' Association of Ghana, CKT-UTAS, Oct. 2020-Fe. 2021
7. **TTFPP Coordinator**, Saboba District, Northern Region, 2015 – 2017
8. **Deputy Patron**, Ghana Muslim Students Association, UDS/CKT-UTAS, 2014 – 2021.
9. **Guest Speaker**, GMSA UDS/CKT-UTAS, 2010 to Date.
10. **Patron**, Mamprugu Students' Union (MAMSU), UDS, Navrongo, 2010-Date.
11. **Secretary**, Tamale Grounds Committee towards public hearing for the creation of the North East Region, 2019.

MEMBERSHIP OF ASSOCIATIONS

1. **Member**, Sigma Xi
2. **Member**, African Mathematical Union (AMU)
3. **Member**, International Mathematical Union (IMU)
4. **Member**, Applied Malaria Modeling Network (AMMnet)
5. **Member**, University Teachers' Association of Ghana
6. **Member**, Society of Industrial and Applied Mathematics
7. **Member**, American Mathematics Society

CONFERENCES AND SEMINARS(SELECTED)

- CONFERENCES
- ▶ **Keynote Speaker**, Opening Symposium, University of Bonn collaboration with African Institute of Mathematical Sciences, Ghana, Bonn, Germany, December, 2023
 - ▶ **Presenter**: 9th Pan-African Congress of Mathematicians, Rabat, Morocco, July, 2017
 - ▶ **Presenter**: 8th Pan-African Congress of Mathematicians, Abuja, Nigeria, 30th June-8th July, 2013
 - ▶ **Participant**: 15th Abdussalam conference of Mathematical Modeling, Cape Coast, Ghana, 2012
- SEMINARS
- ▶ **Facilitator**: Training of staff on typesetting Mathematics in google forms, Mathematics Department CKT-UTAS, 2021
 - ▶ **Facilitator**: Training of Pg Students in use of MATLAB for simulation and \LaTeX for Scientific Document Preparation– UDS, 2019
- WORKSHOPS
- ▶ **Organizer and Moderator**, The 2nd Numerical Analysis Workshop, 9th – 10th November, 2022
 - ▶ **Participant**: Enhancing the Understanding of Quality and Quality Assurance in Higher Education: Clearing the Misconceptions, 31st August 2023, The Global Quality Assurance Association (GQAA), Online Workshop via Zoom.
 - ▶ **Participant**: The Article Publishing Process: An Elsevier Author Workshop, 1st June, 2020
 - ▶ **Participant**: Training program on the Concept Guidance and Counseling, Approaches to Counseling, Guidance Services, Ethical Standards and Confidentiality, UDS, 2017
 - ▶ **Participant**: Grantmanship Workshop for Professional Development by Prof. David Millar, UDS, Navrongo Campus, 14th May, 2018

AWARDS AND FUNDING

- DAAD funding to attend Opening Symposium of University of Bonn and AIMS, Ghana Collaboration at University of Bonn, Germany, December 2023.
- GETFUND Support for Research, 2010, GHC2200 for MSc Thesis Research
- GETFUND Support for Research, 2013, GHC9000 for PhD Thesis Research
- Travel grant, 2017, Pan African Congress of Mathematicians, Rabat, Morocco

SELECTED PUBLICATIONS

1. **Seidu B**, (2024). Mathematical analysis of the role of host-to-host transmission of Maize Streak Virus Disease with Atangana-Baleanu derivative. *Arab Journal of Basic and Applied Sciences*, 31(1), 213-224.
<https://doi.org/10.1080/25765299.2024.2327168>

2. **B Seidu**, OD Makinde, JKK Asamoah (2023). Threshold quantities and Lyapunov functions for ordinary differential equations epidemic models with mass action and standard incidence functions. *Chaos, Solitons & Fractals* 170, 113403. <https://doi.org/10.1016/j.chaos.2023.113403>.
3. S Opoku, **B Seidu**, PNA Akuka (2023). A mathematical analysis of the impact of maternally derived immunity and double-dose vaccination on the spread and control of measles. *Computational and Mathematical Biophysics*, 11 (1), 20230106. <https://doi.org/10.1515/cmb-2023-0106>.
4. EAB Sandow, **B Seidu**, S Abagna (2023). A non-standard numerical scheme for an alcohol-abuse model with induced-complications, *Helijon* 9 (11). <https://doi.org/10.1016/j.helijon.2023.e22263>.
5. JKK Asamoah, B Safianu, E Afrifa, B Obeng, **B Seidu**, FA Wireko, GQ Sun (2023). Optimal control dynamics of Gonorrhoea in a structured population. *Helijon* 9 (10), <https://doi.org/10.1016/j.helijon.2023.e20531>.
6. **Seidu B**, JKK Asamoah, EN Wiah, & J Ackora-Prah. (2022). A comprehensive cost-effectiveness analysis of control of maize streak virus disease with Holling's Type II predation form and standard incidence. *Results in Physics*.
7. S Abagna, **Seidu B**, & CS Bornaa A (2022) Mathematical Model of the Transmission Dynamics and Control of Bovine Brucellosis in Cattle. *Abstract and Applied Analysis*.
8. E Okyere, **Seidu B**, K Nantomah, & JKK Asamoah. (2022) Fractal-fractional SIRS epidemic model with temporary immunity using Atangana-Baleanu derivative. *Commun. Math. Biol. Neurosci*.
9. PNA Akuka, **Seidu B**, & CS Bornaa. (2022) Mathematical Analysis of COVID-19 Transmission Dynamics Model in Ghana with Double-Dose Vaccination and Quarantine. *Computational and Mathematical Methods in Medicine*.
10. **Seidu B**, OD Makinde, CS Bornaa. (2021). Mathematical Analysis of an Industrial HIV/AIDS Model that Incorporates Carefree Attitude Towards Sex. *Acta Biotheoretica* 69 (3), 257-276
11. **Seidu, B.**, Makinde, O., K. & Bornaa, C. (2021). On Some Analytical Properties of the Barnes G-Function. *Asia Pacific Journal of Mathematics*.
12. Christopher Saaha Bornaa, **Baba Seidu**, Yakubu Ibrahim Seini (2021). Modeling the impact of early interventions on the transmission dynamics of coronavirus infection. *F1000Research* 10:518. <https://doi.org/10.12688/f1000research.2021.110885>
13. Asamoah, J., Jin, Z., Sun, G. Q., **Seidu, B.**, Yankson, E., Abidemi, A., Oduro, F. T., Moore, S. E., & Okyere, E. (2021). Sensitivity assessment and optimal economic evaluation of a new COVID-19 compartmental epidemic model with control interventions. *Chaos, solitons, and fractals*, 146, 110885. <https://doi.org/10.1016/j.chaos.2021.110885>
14. Bornaa, C., **Seidu, B.** & Makinde, O. (2021). Mathematical analysis of the impact of vaccination and poor sanitation on the dynamics of poliomyelitis. *International Journal of Nonlinear Sciences and Numerical Simulation*. <https://doi.org/10.1515/ijnsns-2020-0149>
15. Sandow, S., Nantomah, K. & **Seidu, B.** (2021). On Some Analytical Properties of the Barnes G-Function. *Asia Pacific Journal of Mathematics*.
16. Azure I., Twum B. S. & **Seidu, B.** (2021). A New Trapezoidal-Simpson 3/8 Method for Solving Systems of Non-linear Equations, *American Journal of Mathematical and Computer Modelling*. <http://www.sciencepublishinggroup.com>
17. **Seidu, B.** (2020). Optimal Strategies for Control of Covid-19: A Mathematical Perspective. *Scientifica*. <https://doi.org/10.1016/j.scient.2020.09.033>
18. Asamoah, J. K. K., Bornaa, C. S. & **Seidu, B.**, Zhen, J. (2020). Mathematical Analysis of the Effects of Controls on Transmission Dynamics of SARS-CoV-2. *Alexandria Engineering Journal*, <https://doi.org/10.1016/j.aej.2020.09.033>.

19. **Seidu, B.**, Bornaa, C. S., & Makinde O. D. (2020). An Ebola model with hyper-susceptibility. *Chaos, Solitons & Fractals* , 138,109938. <https://doi.org/10.1016/j.chaos.2020.109938>
20. Bornaa, C. S., **Seidu, B.**, & Daabo, M. I. (2020). Mathematical Analysis of Rabies Infection. *Journal of Applied Mathematics*, vol. 2020, <https://doi.org/10.1155/2020/1804270>
21. Baloba, E. B., **Seidu, S.**, & Bornaa, C. S. (2020). Mathematical Analysis of the Effects of Controls on the Transmission Dynamics of Anthrax in Both Animal and Human Populations. *Computational and Mathematical Methods in Medicine*. <https://doi.org/10.1155/2020/1581358>
22. Asamoah, J. K. K., Nyabadza, F., **Seidu, B.**, & Dutta, C. H. (2018). Mathematical modelling of bacterial meningitis transmission dynamics with control measures. *Computational and mathematical methods in medicine*. <https://doi.org/10.1155/2018/2657461>.
23. Asamoah, J. K. K., Oduro, F. T., Bonyah, E. & **Seidu, B.** (2017). Modelling of rabies transmission dynamics using optimal control analysis. *Journal of Applied Mathematics*. <https://doi.org/10.1155/2017/2451237>.
24. Bornaa, C. S., Seini, Y. I. & **Seidu, B.** (2017). Modelling zoonotic diseases with treatment in both human and animal populations. *Commun. Math. Biol. Neurosci.*, vol. 2017, Article ID 11. <https://doi.org/10.28919/cmbn/3236>.
25. **Seidu, B.**, Daabo, M. I., & Bornaa, C. S. (2016). Endemic Analysis of HIV/AIDS Transmission in the Presence of Antiretroviral Therapy, *Journal of AIDS and HIV Research*, 8(5), 44-49. <https://doi.org/10.5897/JAHR2016.0377>
26. **Seidu, B.**, Makinde, O. D., & Daabo, M. I. (2016), Optimal control Analysis of an HIV/AIDS model with linear incidence rate. *Journal of Mathematical and Computational Science* 6(1), 58-75, <http://scik.org/index.php/jmcs/article>
27. **Seidu, B.**, Makinde, O.D., & Seini, Y. I. (2015): Mathematical analysis of the effects of HIV-Malaria Co-infection on workplace productivity. *Acta, Biotheoretica*, 63(2), 151-182, <https://doi.org/10.1007/s10441-015-9255-y>
28. **Seidu, Baba.**, & Makinde, O.D. (2014): Optimal control of HIV/AIDS in the workplace in the presence of careless individuals. *Computational and Mathematical Methods in Medicine*, <https://doi.org/10.1155/2014/831506>.
29. Daabo, M. I., Makinde, O. D., & **Seidu, B.** (2012). Modelling the spread of HIV/AIDS epidemic in the presence of irresponsible Infectives, *African Journal of Biotechnology*, 11 (34), 8425-8432, <https://www.ajol.info/index.php/ajb/article>
30. **Seidu, B.**, (2011). A Matrix System for Computing the Coefficients of the Adams Bashforth-Moulton Predictor-Corrector formulae. *International Journal of Computational and Applied Mathematics*, 6(3): 215-220, <https://www.ripublication.com>

REVIEW OF SCHOLARLY ARTICLES

I have reviewed for several international peer-reviewed journals in reputable publishers.

- Hindawi
- Springer
- Elsevier
- Aims

THESES SUPERVISION

The following are some of the Postgraduate theses that I have supervised to successful completion.

1. Mahamadu Nadiatu (20200708122), Impact of Students Mathematics Self-Efficacy on Career Choices: A Case of Junior High School Female Students in the Sagnarigu Municipality, MPhil Thesis, CKT-UTAS, 2023
2. Alhassan Seidu (20210708256), The Impact of Teacher Characteristics on Learner Achievement in Mathematics in Tamale Metropolitan Senior High Schools, MPhil Thesis, CKT-UTAS, 2023
3. Samuel Opoku (20200707043), Mathematical Analysis of the Impact of Maternally-Derived Immunity and Double-Dose Vaccination on the Spread and Control of Measles, *MPhil Thesis, CKT-UTAS, 2022*
4. Boon David Bapennere (20200707003), Mathematical Modeling of the Transmission of Tuberculosis With Vaccination, Early Detection, Treatment and Recovery, *MPhil Thesis, CKT-UTAS, 2022*
5. Nantogmah A. Sualey (20200607008), A Mathematical Analysis of the Impact of Immature Mosquitoes on the Transmission Dynamics of Malaria, *MPhil Thesis, CKT-UTAS, 2022*
6. Sandow Eric A. Baba (20200707014), A Mathematical Modeling of Alcohol Abuse With Induced-Complications, *MPhil Thesis, CKT-UTAS, 2022*
7. Abdulai K. Suhuyini (20200707022), A Mathematical Model on the Transmission Dynamics of Typhoid fever with Treatment and Boosted vaccination, *MPhil Thesis, CKT-UTAS, 2022*
8. Ayembillah Osman Abdul-Fatawu (UDS/MM/0005/19), Mathematical Modeling of the Dynamics of Maize Streak Virus Disease, *MPhil Thesis, UDS, 2022*
9. Azure Isaac (UDS/DCM/0020/15), An Improved Iterative Method for Solution of Nonlinear Systems With Application to Parameters Estimation of a Photovoltaic System, *PhD Thesis, UDS, 2021*
10. Akuka Philip (UDS/MM/0001/19), A Mathematical Model for the Spread and Control of Novel Corona Virus Disease (Covid-19) With Post-Covid Symptoms, *MPhil Thesis, UDS, 2021*
11. Abagna Stephen (UDS/MM/0007/19), A Mathematical Model for Bovine Brucellosis transmission dynamics in Ghana, *MPhil Thesis, UDS, 2021*
12. Sunday Sandow (UDS/MM/0001/18), On Some Analytical Properties of the Barnes G-Function, *MPhil Thesis, UDS, 2020*
13. Issah Musah (UDS/MM/0005/18), Analysis of the Performance of Two Political Parties in Ghana Using Game Theory and Linear Programming, *MPhil Thesis, UDS, 2020*
14. Baloba B. Elijah (UDS/MM/0039/16), Mathematical Modelling of Anthrax Epidemic in Both Animal and Human Populations, *MPhil Thesis, UDS, 2019*
15. Armah Agyeman Emmanuel (17000470), A Mathematical Modelling of Effects of Smoking on the Transmission Dynamics of HIV-TB Co Infection, *MPhil Thesis, UDS, 2019*
16. Iddrisu A. M. Katali (UDS/MM/0040/16), A Mathematical Model for the Dynamic of Cholera Transmission With Control Measures, *MPhil Thesis, UDS, 2019*
17. Suleman Adamu Bukari (UDS/MM/0002/17), A Mathematical Analysis of Pre-exposure Prophylaxis (Vaccination) and Post-exposure Prophylaxis (Treatment) of Rabies Transmission Dynamics, *MPhil Thesis, UDS, 2019*.

EXAMINATION OF POSTGRADUATE THESES

The following are some selected MPhil and PhD thesis I successfully examined.

- 1 Peter Yakubu Pandam (2021), Magnetized Flow of Maxwell Fluid Over a Slippery Stretching Reactive Surface With Thermophoretic Deposition, *MPhil Thesis, UDS*
- 2 Ahmed Yakubu (2021). A New Analogue of the Exponential Integral Function and its Properties. *PhD Thesis, UDS.*
- 3 Etwire, C. J. (2020). Hydrodynamic Study of Oil-Based Nanofluid Flow Over Stretching Surfaces. *PhD Thesis, UDS.*
- 4 Ajega, A. S. (2019). On Chebyshev and Riemann-Liouville Fractional inequalities in q -calculus. *Mphil Thesis, UDS.*
- 5 Sulemana ,M. (2019). Unsteady Magnetohydrodynamics of Heat and Mass Transfer Through Porous Media. *PhD Thesis, UDS.*
- 6 Nantomah, K. K. (2017). Optimal Siting of Community-Based Health Planning and Services Facilities within the Upper East Region of Ghana. *MPhil Thesis, UDS.*

REFEREES

Prof. Oluwole D. Makinde

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Stellenbosch University, South Africa
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Prof. Albert Luguterah

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and Applied Sciences.
POSITION Acting Vice-Chancellor
MOBILE +233 (024) 470-1150
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Prof. Mohammed Muniru Iddrisu

EMPLOYER University for Development Studies
POSITION Principal, Nyankpala Campus
MOBILE +233 (024) 364-2642
EMAIL middrisu@cktutas.edu.gh