

CURRICULUM VITAE

MAXWELL AKWASI BOATENG (Ph.D., MIMA)

DEPARTMENT OF MATHEMATICS

FACULTY OF PHYSICAL AND COMPUTATIONAL SCIENCES

COLLEGE OF SCIENCE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

PHONE: +233 246 804 908/ +233 597 526 897

Email: boateng.ma@knust.edu.gh, makwasiboateng@gmail.com, maboateng@nims.edu.gh

SUMMARY

Maxwell Akwasi Boateng, MIMA, holds a Ph.D. in Mathematical Statistics, an MPhil in Mathematical Statistics, and a BSc. in Mathematics from the Kwame Nkrumah University of Science and Technology (KNUST) Kumasi, Ghana. He is currently a faculty member at the Department of Mathematics at KNUST, a member of the Institute of Mathematics and its Applications (IMA), a fellow of the National Institute for Mathematical Sciences (NIMS-Ghana), a member of the International Biometric Society (IBS) and a member of Statistics Without Borders (SWB). He was involved in academic work at the then Ghana Technology University College (GTUC), now Ghana Communication Technology University (GCTU), from September 2015 to 2021. His research areas include mathematical statistics, specifically probability theory, statistical modelling (multivariate analysis, time series modeling, longitudinal data analysis), measure theory, integration, and optimization. He has been a reviewer for over 40 articles and has several publications in refereed journals. He mainly teaches Fundamental Algebra and Calculus, Differential and Integral Calculus, Probability, Statistics, Stochastic Processes, Computational Mathematics, Discrete Mathematics (Structures), Numerical methods, and Optimization. He also collaborates with scientists from Engineering, Biology, and other interdisciplinary sciences.

EXPERIENCE

2021- TO DATE, LECTURER, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

Courses Taught:

- Optimization for MPhil Biodata Analytics and Computational Genomics.
- Differential Equations for Mechanical, Aerospace, Marine, and Petrochemical Engineering (Year 2).
- Multivariate Calculus for Mechanical, Aerospace, Marine, and Petrochemical Engineering (Year 2).
- Algebra for Medicine, Dentistry, Physician Assistantship, Veterinary Medicine, Nursing, Physiotherapy, and Sports Science, Midwifery, and Medical Laboratory Technology (Year 1).
- Calculus for Physiotherapy and Sports Science and Ceramic Technology (Year 1).

2016 – 2021, LECTURER, GHANA TECHNOLOGY UNIVERSITY COLLEGE (Ghana Communication Technology University),

Courses Taught:

- Computational Mathematics for Bachelor of Information Technology (BIT) and Diploma in Information Technology (DIT), Level 100
- Probability and Statistics, Computational Mathematics for Bachelor of Information Technology (BIT) and Diploma in Information Technology (DIT), Level 100
- Discrete Structures, Bachelor of Information Technology (BIT) and Diploma in Information Technology (DIT), Level 100
- Differential Calculus (MATH II), Bachelor of Telecommunication Engineering (BTE) level 100
- Integral Calculus (MATH III), Bachelor of Telecommunication Engineering (BTE) level 200

- **Numerical Methods & Optimization (MATH IV)**, Bachelor of Telecommunication Engineering (BTE), level 200
- Probability, Statistics, and Stochastic Processes (MATH V), Bachelor of Telecommunication Engineering (BTE) level 300

SEPTEMBER-DECEMBER 2015, GHANA TECHNOLOGY UNIVERSITY COLLEGE, KUMASI

Adjunct Lecturer: Computational Mathematics for Bachelor of Information Technology (BIT) and Diploma in Information Technology (DIT), Level 100

JANUARY-DECEMBER 2015 MATHEMATICS DEPARTMENT, KNUST

Graduate Assistant

- Organizing Engineering Mathematics tutorials for second year Engineering students- Differential Equations, Multivariable Calculus
- Organizing tutorials for third year Mathematics students- Theoretical Mechanics I and II

EDUCATION

2016 – 2020 KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

- Ph.D. MATHEMATICAL STATISTICS

2013-2015 KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

- Master of Philosophy in Mathematical Statistics

Courses Studied: Statistical Computing, Statistical Theory, Survival Analysis, Analysis of Categorical Data, Probability and Stochastic Processes, Measure Theory and Integration I and II, Probability Theory, Multivariate Analysis, Generalized Linear Models, Design of Investigations, Statistical Quality Control.

2008-2012 KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

- Bachelor of Science in Mathematics

Some Courses Studied: Numerical methods and computations, Introduction to MATLAB, Discrete Mathematics, Linear Algebra, Introductory Pure Mathematics, and Vector Analysis.

PUBLICATIONS

- [1] A. Y. Omari-Sasu, D. Asamoah Owusu, **M. A. Boateng**, Z. Sabogu, "Survival Analysis of Tuberculosis Patients in Upper West Region of Ghana", *International Journal of Statistics and Applications*, 2016 6(2), pp. 40-44, 10.5923/j.statistics.20160602.02
- [2] **Maxwell Akwasi Boateng**, Akoto Yaw Omari-Sasu, Richard Kodzo Avuglah, and Nana Kena Frempong, "Hybrid Clayton-Frank Convolution-Based Bivariate Archimedean Copula," *Journal of Probability and Statistics*, vol. 2018, Article ID 5902839, 9 pages, 2018. <https://doi.org/10.1155/2018/5902839>.
- [3] Paintsil, E. K., Omari-Sasu, A. Y., Addo, M. G., **Boateng M. A.** (2019), Analysis of haematological parameters as predictors of Malaria Infection Using a Logistic Regression Model: A Case Study of a Hospital in the Ashanti Region of Ghana", *Malaria Research and Treatment*, 1(454),1-7, DOI: 10.1155/2019/1486370
- [4] **M. A. Boateng**, A. Y. Omari-Sasu, R. K. Avuglah, N. K. Frempong, "A Mixture of Clayton, Gumbel, and Frank Copulas: A Complete Dependence Model", *Journal of Probability and Statistics*, vol. 2022, Article ID 1422394, 7 pages, 2022. doi.org/10.1155/2022/1422394

- [5] Okyere S, Ackora-Prah J, Bonyah E *et al.* Hypertension and COVID-19 fractional derivative model with double dose. *F1000Research* 2023, **12**:495 (<https://doi.org/10.12688/f1000research.133768.1>)
- [6] Amoamah, M. O., Dadzie, J., Asenso, F., **Boateng, M.**, & Ackora-Prah, J. (2024). A geometric solution to political gerrymandering: A modified convex hull approach in Ghana's democracy: *Multidisciplinary Science Journal*, 7(2), 2025048. <https://doi.org/10.31893/multiscience.2025048>
- [7] Maxwell A. Boateng, A. Y. Omari-Sasu, Nana K. Frempong, "Volatility Assessment of Equities on the Ghana Stock Exchange", *International Journal of Statistics and Applications*, 2015 5(6), pp. 288-292, 10.5923/j.statistics.20150506.04
- [8] A. Y. Omari-Sasu, Nana K. Frempong, Maxwell A. Boateng, Richard Kena Boadi, "Modeling Stock Market Volatility Using GARCH Approach on the Ghana Stock Exchange", *International Journal of Business and Management* 10/2015; 10(11):169. DOI: 10.5539/ijbm.v10n11p169
- [9] A. Y. Omari-Sasu, D. Asamoah Owusu, M. A. Boateng, I. Tettey "Hedging Longevity Risk using Longevity Swaps: A case study of the Social Security and National Insurance Trust (SSNIT), Ghana", *International Journal of Finance and Accounting*, 2016; 5(4): 165-170 doi:10.5923/j.ijfa.20160504.01
- [10] N. K. Frempong, Nimo Nicholas, M. A. Boateng, "Decision tree as a predictive modeling tool for auto insurance claims", *International Journal of Statistics and Applications*, 2017 7(2), pp. 117-120, 10.5923/j.statistics.20170702.07
- [11] Abigail Yeboah Boateng, Akoto Yaw Omari-Sasu, Derrick Asamoah Owusu, Maxwell Akwasi Boateng, "Forecasting Mortality Rate of a Ghanaian University Staff Superannuation Scheme", *International Journal of Finance and Accounting* 2017, 6(4): 111-115 DOI: 10.5923/j.ijfa.20170604.03
- [12] Nana Kena Frempong, Osei Tawiah Owusu, Maxwell Akwasi Boateng, Francis Bukari. Fitting Finite Mixtures of Generalized Linear Regressions on Motor Insurance Claims. *International Journal of Statistics and Actuarial Science*. Vol. 1, No. 5, 2017, pp. 112-116. doi: 10.11648/j.ijsas.20170105.11
- [13] Maxwell Akwasi Boateng, Akoto Yaw Omari-Sasu, Richard Kodzo Avuglah, Nana Kena Frempong, On Two Random Variables and Archimedean Copulas, *International Journal of Statistics and Applications*, Vol. 7 No. 4, 2017, pp. 228-237. doi: 10.5923/j.statistics.20170704.05.
- [14] Boateng, M. A., Omari-Sasu, A. Y., Frempong, N., & Avuglah, R. (2018). On a Hybrid Clayton-Gumbel and Gumbel-Frank Bivariate Copulas with Application to Stock Indices. *Journal of Advances in Mathematics and Computer Science*, 30(1), 1-13. <https://doi.org/10.9734/JAMCS/2019/45668>
- [15] Boateng, A. Y., Omari-Sasu, A. Y., & Boateng, M. A. (2024). Stochastic Mortality Models with Birth Cohort Effects in Older People: A Systematic Review. *African Journal of Empirical Research*, 5(4), 1496–1504 <https://doi.org/10.51867/ajernet.5.4.125>

PhD. THESIS SUPERVISION

- John Dadzie-Tropical Mathematics Approach to Solving Selected Combinatorial Optimization Problems (2024-completed)
- Martin Owusu Amoamah- Mathematical Techniques to Curb Electoral Gerrymandering in Ghana through Compactness and Efficiency Gap Metrics (2024-completed)

INTERNAL EXAMINER (MPHIL THESIS)

- Mathematical Model Controlling the Spread of the Novel COVID-19 Virus; An Optimal Control Analysis. Case Study- Ghana (Asiedu Kokuro).
- Mathematical Models for Analyzing and Minimizing Power Losses based on Ohmic and Corona Effects on Transmission Lines in Ghana (Isaac Kweku Gyene)
- Convex Optimization for Metric Maps in Hilbert Spaces (Obaapa Ntim Barimah)

CONFERENCE AND SEMINAR/WORKSHOP

- Workshop on Education Assessment and Measurement, College of Science, KNUST, February 2, 2022.
- Workshop on Curriculum Development, College of Science, KNUST, February 9, 2022
- Seminar on Research and Grantsmanship, KNUST, February 10, 2022
- International Conference on Computing, Computational Modelling and Applications (ICCMA) 2019, Center for Information Technology and Advanced Computing (CRITAC)
- Gaussian Processes and Applications in Machine Learning (GPAML) workshop 2019, AIMS-GHANA.
- Stochastics and Applications, Research and Training (START) Workshop, 2nd edition, African Institute for Mathematical Sciences (AIMS) –GHANA, 19th – 22nd February 2018.
- Genomics Big Data Science workshop 2017, African Institute for Mathematical Sciences (AIMS) - GHANA
- Mathematics in Application (MiA) 2017, AIMS-GHANA
- Scientific Computing and Industrial Modelling (SCIM) 2017, National Institute for Mathematical Sciences (NIMS) Ghana
- Departmental seminar, Mathematics Department, KNUST, Presentation: “Modeling Stock Market Volatility Using the GARCH Approach: The Ghana Stock Exchange (GSE)”, 2015.
- Participant, 8th ANNUAL GRASAG-KNUST INTERNATIONAL RESEARCH CONFERENCE, “The Search for Sustainable Development: The Graduate Students’ Role”, 2014/2015 Academic year.

Service to the University

1. **Departmental National Service Coordinator**, Department of Mathematics, 2023- Date
2. **Internal Examiner**, Department of Mathematics, FPCS, KNUST- 2020-date
3. **Fellow**- Independence Hall, 2022-date
4. **Mentor**- Independence Hall, 2023-date
5. **Member**- Planning Committee for Students’ Appreciation Day- 2024
6. **Member**- Nominations and Review Sub-committee, Students’ Appreciation Day-2024
7. **Member**- Committee to develop Policy on Communication and Media Engagement, KNUST-2024
8. **Member**- Interview of Applicants for RealMaths Programme-2022
9. **Member**, Departmental Tracer Studies Sub-committee, COS, KNUST-2023
10. **Member**- Committee for Visibility and Industrial Outreach, Department of Mathematics- 2023-2024
11. **Member**- National Service Personnel Orientation Committee, Department of Mathematics- 2023/2024
12. **Facilitator**- Freshman Prep Seminar Programme, Association of Aerospace Engineering Students, KNUST- 2023
13. **Facilitator/Resource Person**- Short Course on Data Statistics, WASCAL, KNUST- 2022
14. **Academic Tutor**, Department of Mathematics, 2021-Date
15. **Member**, Departmental Board, Department of Mathematics, 2021-date
16. **Member**, Committee to interview Mature Applicants for Undergraduate BSc. Mathematics, 2021/2022

Other Professional Service

1. **External Examiner**, AIMS-Ghana, Accra- 2022-date
2. **Team Lead**, Mampong RGN and RM Invigilation Team MOH Diploma Terminal Examination, 2024
3. **Member**- Agogo RGN and RM Invigilation Team MOH Diploma Terminal Examination, 2023
4. **Member**- Jirapa CHN and RGN Invigilation Team MOH Diploma Terminal Examination, 2022
5. **Reviewer**- Heliyon 2021-date

PROFESSIONAL ASSOCIATION (MEMBERSHIP)/FELLOWSHIPS

- Member, Institute of Mathematics and Its Applications (IMA, UK)
- Fellow, National Institute for Mathematical Sciences Ghana (NIMS-GHANA)
- Member, International Biometric Society
- Member, Statistics Without Borders (SWB)

REFEREES

1. **Joseph Ackora-Prah (Ph.D.)**
Professor,
Department of Mathematics, KNUST
2. **Kwaku Forkuoh Darkwah**
Associate Professor
Department of Mathematics, KNUST
3. **Richard Kodzo Avuglah (Ph.D.)**
Senior Lecturer
Department of Statistics and Actuarial Science, KNUST