

Joseph Baafi

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PROFILE

Mathematical biologist specializing in infectious disease modeling and population dynamics in ecological systems. Experienced in developing deterministic and stochastic models to assess vector-borne disease risks and inform public health strategies. Skilled in data analysis, sensitivity analysis, and scientific communication, effectively presenting complex findings to diverse audiences. Proficient in R and LaTeX, with intermediate proficiency in Python.

KEY COMPETENCIES

Scientific

- Data Analysis & Interpretation
- Climate-Driven Modeling
- Statistical Analysis
- Multitasking & Detail-Oriented

Project Management

- Strategic Project Planning
- Managing Project Evolution
- Collaboration & Teamwork
- Presentation & Public Speaking

PROFESSIONAL EXPERIENCE

Doctoral Researcher

2020 – Present

Memorial University of Newfoundland – St. John's, NL

- Worked on projects investigating downsizing of COVID-19 contact tracing in highly immune populations.
- Developed climate-driven models to assess mosquito population dynamics.
- Presented findings at 6 academic meetings, including an invited talk at the Super Spreader Seminar Series.

Teaching Assistant

2020 – 2025

Memorial University of Newfoundland – St. John's, NL

- Supported undergraduate instruction through demonstrations and practical session guidance.
- Taught R programming and supported students with R-based assignments.
- Supported assessments through exam invigilation and grading.
- Co-developed an R programming manual for quantitative training of science undergraduates.
- Supported undergrad and graduate students with research proposals, data analysis, and data visualization.

Research Intern

2019 – 2020

Mila - Quebec Artificial Intelligence Institute – Montreal, QC

- Analyzed the opioid epidemic using data-driven modeling techniques and AI.
- Delivered bi-weekly presentations and gathered project feedback in team meetings.
- Collaborated with ML researchers to refine predictive models.
- Collaborated with research coordinator to organize monthly social events.

Mathematics Lecturer

2018 – 2019

Anglican University College of Technology – Nkoranza, Ghana

- Taught undergraduate courses including Basic Statistics, Quantitative Methods, Subsidiary Mathematics, and Mathematical Methods.
- Assessed student performance through mid-semester and end-of-semester examinations.
- Advised students on academic progress and supported their understanding of core mathematical concepts.
- Integrated digital tools and interactive teaching methods to enhance student engagement and comprehension.
- Designed assignments and problem sets to reinforce theoretical knowledge and assess learning outcomes.

Mathematics Lecturer

2016 – 2018

Valley View University – Ghana

- Taught undergraduate courses including Algebra, Vectors, Statistics, Probability and Differential Equations.

- Assessed students through midterm and final examinations.
- Supervised 13 undergraduate research and group projects, mentoring teams of up to 4 students and providing mathematical guidance and feedback.

Mathematics Teacher (Ghana Education Service)

2016 – 2019

Kwabre Senior High School – Akuma, Nkoranza-South, Ghana

- Taught both core and elective mathematics to senior high school students.
- Assessed student performance through quizzes, assignments, and examinations.
- Provided academic mentoring and career guidance to students.
- Prepared students for national examinations, contributing to improved academic performance.

Teaching Assistant

2013 – 2014

Kwame Nkrumah University of Science and Technology – Kumasi, Ghana

- Conducted tutorial sessions for undergraduate courses including Integral Equations, Differential Equations, and Mathematical Methods.
- Assisted final-year students with their project work.
- Supported exam invigilation and grading.

EDUCATION

Ph.D. Candidate, Biology (Mathematical Biology)

Memorial University of Newfoundland – St. John's, NL

2020 – Present

Expected completion: December 2025

- 2 peer-reviewed publications and 6 conference presentations

Master of Philosophy, Applied Mathematics

Kwame Nkrumah University of Science and Technology – Kumasi, Ghana

2015 - 2016

- 3 publications and 2 symposium presentations

Master of Science, Mathematical Sciences

African Institute for Mathematical Sciences – Accra, Ghana

2014 - 2015

Bachelor of Science, Mathematics

Kwame Nkrumah University of Science and Technology – Kumasi, Ghana

2009 - 2013

LEADERSHIP AND TRAINING

- **OMNI-RÉUNIS Super Spreader Seminar Series Committee Lead** (2 years): Led a team of four in organizing a biweekly hybrid seminar series focused on infectious disease modeling.
- **Customer Service Representative** (1 year): Developed interpersonal and conflict-resolution skills while addressing customer inquiries and complaints in a team environment.
- **Pathfinder Director** (2 years): Provided structured discipline and life-skills training to children aged 4–15 through educational and recreational activities.
- **Epidemiological Modeling Clinic Participant**: Completed advanced training in mathematical modeling of infectious diseases at AIMS-Ghana.
- **AARMS-EIDM Summer School Participant**: Completed advanced training in infectious disease modeling, focusing on mathematical epidemiology and data-driven decision support models. Held at the Bonne Bay Marine Station, Memorial University of Newfoundland.
- **CareerTech Data Analytics Workshop Participant**: Completed training in data analytics and visualization using R, organized at Memorial University, St. John's.

ADDITIONAL SKILLS

- Public Speaking
- Conflict Resolution
- Relationship Building
- Teamwork (remote or in-person)
- Data Analysis & Visualization