

CURRICULUM VITAE

AWUAH KWADWO FRANCIS, PhD

CONTACT INFORMATION

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PROFILE AND RESEARCH INTERESTS

Dr. Francis Kwadwo Awuah,(PhD) is a Lecturer at the Department of Teacher Education at Kwame Nkrumah University of Science and Technology (KNUST). He holds a Ph.D. in Mathematics education from the University of South Africa, and both his Master's and Bachelor's degrees in Mathematics are from KNUST. His research interests are primarily focused on Mathematics problem-solving, Ethnomathematics approaches to enhance Mathematics education, Mathematics values, innovative teaching, and alignment issues in Mathematics education. He has published extensively in these areas and supervises postgraduate and undergraduate students

EDUCATIONAL BACKGROUND

Degree	Date	Institution
PhD Mathematics Education	April, 2019	Institute of Science and Technology Education, University of South Africa

Certificate in Investment Analysis and Portfolio Management	Dec, 2013	University of South Africa, South Africa
Diploma in risk management	Dec, 2013	Oxbridge academy, Cape town, South Africa
Diploma in project management	Dec, 2012	Oxbridge Academy, Cape town, South Africa
MSc. Mathematics	2005- 2008	Kwame Nkrumah University of Science and Technology (KNUST), Ghana
BSc. Mathematics,	2000- 2004	Kwame Nkrumah University of Science and Technology (KNUST), Ghana
Secondary School Certificate (SSCE)	1996-1998	Mfantsipim school, Cape Coast, Ghana

RELATED SKILLS

- Proficient in Quantitative Data Analysis using SPSS.
- Proficient in the use of GeoGebra software in teaching mathematical concepts.
- Proficient in Microsoft Office Suite (Word, Excel and PowerPoint).

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

- **Member**, University Teachers Association of Ghana (UTAG).
- **Member**, Association for Mathematics Educators of South Africa (AMESA).
- **Member (candidate)**, South African Council for Natural Scientific Profession.
- **Member**, South African Council of Educators (SACE).

WORK EXPERIENCE

2020 – Present	Lecturer , Department of Teacher Education, KNUST, Kumasi-Ghana
2020 – 2020	Educator , Mathematics and Physical sciences, The leadership college, Cape Town, South Africa

2016 - 2017	Educator , Mathematics and Physical Sciences, Velangaye secondary school, Department of Education, Kwa Zulu Natal, KZN.
2011 - 2015	Educator , Mathematics and Physical sciences, Kwadenge secondary school; Department of Education, Kwa Zulu Natal, KZN.
2013 - 2015	E -Tutor , (Statistics and Probability), University of South Africa.
2005 – 2010	Part-time Mathemaics teacher , New World Junior High School.
2006 - 2008	Demonstrator , Department of Mathematics, KNUST.
2004 - 2005	National Service Personnel , New World Junior High school.

SERVICE TO THE UNIVERSITY COMMUNITY

Nov, 2023 – Present	Coordinator/Head of Department , Department of Teacher Education, (KNUST)
July, 2025	Member , committee for peer-review and assessment of teaching/materials and delivery of Mr. Emmanuel Tabi-Agyei, Department of Industrial Art, KNUST.
April, 2025	Chairperson , Retreat committee of the Faculty of Educational Studies, KNUST.
2022 - Present	Patron , Faculty of Educational studies students' association.
Mar, 2025	Member , committee for peer-peer classroom lecture observation and assessment of the teaching of Prof S.K. Appiah of statistics and actuarial science department, KNUST
May, 2024	Member , committee for peer and professional evaluation of the teaching of Dr. Boadi Appiah of mathematics department, KNUST
Jun, 2023	Member , peer assessment committee for the teaching of Dr. Boadi Appiah of mathematics department KNUST
Jan, 2023	Member , Technical and Scientific sub-committee of the E-learning Ghana conference planning committee, KNUST.
2022 - 2023	Faculty Examination Officer , Faculty of Educational studies, KNUST
2021 – 2022	Department Examinations Officer , Department of Teacher Education,

KNUST.

2021 - 2024	Member , KNUST Audit committee to audit KNUST basic school Teaching and Learning activities.
Jun, 2023	Member , Panel for Lectureship appointment interview, Department of Teacher Education, KNUST
Feb, 2022	Member , Panel for Lectureship appointment interview, Department of Teacher Education, KNUST
June, 2022	Member , Panel for Lectureship appointment interview, Department of Teacher Education, KNUST
Jan, 2021	Assistant Examinations Officer , Faculty of educational studies, KNUST.
Jan, 2022	Member , Panel for Lectureship appointment interview, Department of Teacher Education, KNUST
Nov, 2022	Panel Chair , Panel for PhD admission, Department of Teacher Education, KNUST
Nov, 2021	Member , Panel for PhD admission, Department of Teacher Education, KNUST

SERVICE TO THE NATIONAL COMMUNITY

June, 2025	Member , GTEC Team to develop National Continuous Professional Development materials for implementing the New B.Ed. Secondary School teacher Education Programmes.
May, 2024	Member , committee to review teacher education curriculum for Senior High/Technical School teachers.
October, 2024	Chief Examiner , coordination of end of semester examinations of KNUST affiliates colleges of education.
September, 2024	Coordinator and Supervisor , the conduct of end of semester examinations at St. Joseph's College of Education, Bechem.

July, 2024	Guest of honor to Graduation ceremony
Jan, 2021- Date	Examiner , Test items construction for SHS mathematics paper, Ghana teacher Licensure examination (GTLE).
2023 -	Chief Examiner , conference marking of end of semester examinations of B.Ed. students in affiliate colleges of education.
2022-2023	End of semester exams Supervisions in KNUST affiliate colleges of education
Jan, 2021	Member , Team of experts to review the structure and pattern for questions of Ghana teacher Licensure examination (GTLE)
Jan, 2021	Supplementary Exam Supervision KNUST affiliate colleges of Education
2024 – Present	Chief Examiner , Learning, Teaching and Applying Analytical Geometry
2021 - Present	Chief Examiner , Learning, Teaching and Applying Geometry and Handling Data for KNUST affiliate colleges of Education.
2021 - Present	Chief Examiner , Learning Teaching and Applying Further Algebra, KNUST affiliate colleges of Education.
2021 – Present	Chief Examiner , Learning Teaching and Applying Calculus, KNUST affiliate colleges of Education.
2021 - Present	Subject Lead , Learning Teaching and Applying Further Algebra, Theories in Learning Mathematics for Early Grade, Primary and J.H.S.Education, Department of Teacher Education

SERVICE TO THE INTERNATIONAL COMMUNITY

2014-2016	Lead Educator , in physical sciences, Kwa-Zulu natal Department of Education
2018-2020	Examination marker , Grade 12 end of year mathematics (PAPER 1) and physical science, (Paper 1), Western Cape Department of Education

Sept 2024	Reviewer, Review of Education
Jun, 2019	Reviewer, International Journal of instruction
Aug, 2019	Reviewer, Scientific African Journal

CONTINUING PROFESSIONAL DEVELOPMENT (Workshop attended)

- Five-day virtual subject-based workop in preparation for first semester of 2022/2023 academic year for subject leads of KNUST affiliate colleges of education , 2023
- Workshop on content development and classification of test items, by National Teaching Council (NTC), on November 4 to 7, 2022 at Elmena Beach resort, Ghana.
- Two-day course in digital literacy organized by e-learning, center, KNUST Kumasi, Ghana in 2022
- Training on journal credibility and staff visibility for academic staff. A 2-day workshop organized by the College of Science Library Digital Hub, KNUST, 14-15 July 2021
- 2-day Test Item Development and Administration, organized by Ghana education service, 2007, Asakawa Kumasi

Conferences attended:

- Three Way International Dialogue between Kwame Nkrumah University of Science and Technology, Ghana, University of East Anglia, UK and Ceara State University, Brazil
- Doctoral Research Conference on (Higher) Education – “Making Sense of Research Methodology in times of Pandemic: Implications for fieldwork and data analysis”
- 2014 South African international conference on education, rethinking teaching and learning in the 21st century.

AWARDS AND RECOGNITION

- Awarded certificate for producing distinctions in Physical sciences in End of year National Examinations in 2012, Kwadenge secondary school, Department of education, Kwazulu Natal
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2013 Kwadenge secondary school, Department of Education, Kwazulu- Natal
- Awarded certificate for producing 100% PASS RATE in Physical sciences in End of year National Examinations from 2013, Department of Education, Kwazulu- Natal
- Awarded certificate for producing Distinction in Physical sciences in End of year National Examinations from 2015 Kwadenge secondary school, Department of Education, Kwazulu- Natal
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2016, Velangaye secondary, Department of Education, Kwazulu- Natal
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2017, Velangaye secondary, Department of Education, Kwazulu- Natal
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2018, the leadership college cape town, western cape department of education
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2019, the leadership college cape town, western cape department of education
- Awarded certificate for producing distinction in Physical sciences in End of year National Examinations from 2020, the leadership college cape town, western cape department of education
- Cum laude commendation in my diploma in project management (2012)
- Cum laude commendation in my diploma in risk management (2013)

TEACHING INTERESTS

- Problem-solving in mathematics education
- Quantitative analysis in Education
- Learning teaching and applying calculus
 Learning teaching and applying Euclidean Geometry and trigonometry
- Probability and statistical inference
- Theories in education
- Learning teaching and applying further algebra
- Application of GeoGebra in the teaching of mathematics
- Analytical geometry
- Statistics
- assesement

RESEARCH AREA AND INTERESTS

- Problem-solving in Mathematics Education
- Innovative ways to improve teaching and learning of mathematics
- Probability and Statistics
- Alignment issues in education
- Innovative ways of combating examination malpractice in Ghana
- integrating ethnomathematics approaches
- mathematics values

ONGOING RESEARCH (Under Review)

[1] Alignment between examination questions and learning teaching and applying
Euclidean geometry and trigonometry course manual

[2] Alignment between the Learning Objectives and Examinations: A Comparative Analysis of TVET mathematics curriculum in Ghana and South Africa.

REFEREED JOURNAL ARTICLES

[1] Dorwu, E., Awuah, F.K. & Kyeremeh, P (2025) . Exploring mathematical values held by high school mathematics teachers. *Discov Educ* 4, 66 . <https://doi.org/10.1007/s44217-025-00457->

[2] Acheampong, P.A & Awuah, F. K (2025). Examining the real-life Application Problems in welding and Fabrication Students Mathematics Exercise Books. *East African Journal of Arts and Social Sciences* 8(1) 247-256. DOI

[3] Dorwu ,E, Awuah F. K & Kyeremeh, P (2025).From Professing to Doing: Mathematical Values Practices of Mathematics Teachers Preprint DOI: [10.21203/rs.3.rs-4893772/v1](https://doi.org/10.21203/rs.3.rs-4893772/v1)([awaiting](#))

[4] Kyeremeh, P., Kwadwo Awuah, F., & Clark Orey, D. (2025). Challenges regarding the integration of ethnomathematical perspectives into geometry teaching: The faculty reflection. *Asian Journal for Mathematics Education*, 0(0). <https://doi.org/10.1177/>

[5] Kyeremeh, P, Awuah F.K & Orey, D.C (2025). Exploring Geometry Found Outside of School: Insights from Faculty Perspective Preprint DOI: [10.31235/osf.io/zhpt5](https://doi.org/10.31235/osf.io/zhpt5)([awaiting](#))

[6] Kyeremeh, P, Awuah F.K & Orey, D.C (2025). From faculty awareness to integration: faculty attempt to incorporate the outside of school geometry into geometry teaching. PreprintDOI: [10.31235/osf.io/dhq52](https://doi.org/10.31235/osf.io/dhq52)([awaiting](#))

[7] Folsom, D,& Awuah, F.K,(2024) Alignment of topics in curriculum standards and exit examinations; a case of pre-tertiary TVET core mathematics in Ghana([awaiting](#))

- [8] Kyeremeh,P, Awuah,F,K & Dorwu, E.(2023). Integration of Ethnomathematics in Teaching Geometry: A Systematic Review and Bibliometric Report *Journal of Urban Mathematics Education* 16(2) 68-89. DOI: [10.21423/jume-v16i2a519](https://doi.org/10.21423/jume-v16i2a519)
- [9] Ogbonnaya, U. I & Awuah F. K., (2019). Quintile ranking of schools in South Africa and learners' achievement in probability. *Statistics Education Research Journal*,18(1) 106-119,
- [10] Awuah F. K., & Ogbonnaya, U. I. (2016). Grade 12 learners' achievement in probability. In B. Goba & J. Naidoo (Eds) *Reclaiming our African pride through mathematics teaching Proceedings of 22nd Annual National Congress of the Association for Mathematics Education of South Africa*. (pp. 98-111). Mbombela, South Africa.
- [11] Folson F. & Awuah F. K. (2014). Combating Examination Malpractices in the Basic Certificate Examination (BECE) in Ghana. *International Journal of Computer Appliaction*.100(7) 12-23, DOI:[10w.5120/17536-8113](https://doi.org/10.5120/17536-8113)
- [12] Optimal Packing Problems: A case study of Garden City Radio, An FM Station in Kumasi. *African Journal of Mathematics and Computer Sciences Research*, 4(3) pp. 107-112,
- [13] Awuah F. K., & Ogbonnaya, U. I. (2017). Grade 12 learners' conceptual knowledge in probability and counting principle, *International Journal of Computer Applications* 176(6), PP.24-30
- [14] Awuah, F. K., & Ogbonnaya, U. I. (2020). Grade 12 Students' Proficiency in Solving Probability Problems Involving Contingency Tables and Tree Diagrams. *International Journal of Instruction*, 13(2), 819-834. <https://doi.org/10.29333/iji.2020.13255a>

CONFERENCE PAPERS

[1] Awuah, F.K. and Afari, S.M. (2025). Current Trends and Future Prospects of AI Integration in Mathematics Education: A Systematic Review. KNUST E-Learning International Conference on Transforming Education through Responsible Innovation and Inclusion in the Digital Era, 22-25 July 2025, -Great Hall, KNUST, Ghana.

[2] Boakye, E. S. & Awuah, F. K. (2024). Exclusion from STEM: Implications for Interdisciplinary Education and the Future of Visually Impaired Students in Ghana. A paper presented at the Ghana Academy of Arts and Sciences Higher Education Project Closing Conference, November 28 – 29, Accra, Ghana.

PRESENTATION AND INVITED TALKS (SEMINAR)

JOURNAL MANUSCRIPT REVIEWED

COMPLETED POSTGRADUATE SUPERVISION

- **PhD. Mathematics Education:** Teacher educators' preparedness to integrate ethnomathematics approaches into learning and teaching of Euclidean geometry in Ghana (Patrick Kyeremeh, 2024, Ghana)
- **Mphil Mathematics Education:** Geogebra and basic 8 learners geometry achievement among selected schools in Oforikrom (Emmanuel Dwomah, 2024, Ghana)
- **Mphil Mathematics Education:** Upper primary teachers' implementation of inquiry-based learning in mathematics classroom (Asante Amoakohene, 2024, Ghana)
- **MPhil. Mathematics Education:** Exclusion of Students with Visual Impairment from Mathematics Education in Ghanaian Colleges of Education (Emmanuel Sasu Boakye, 2025, Ghana)
- **MPhil Mathematics Education:** Teaching of mathematical values: Senior High School Mathematics teachers' preferences and practices in Tano South Municipality, Ghana (Esenam Dorwu, 2025, Ghana)

- **M.Ed. Mathematics Education:** GeoGebra and learners' conceptual understanding in graphing and interpreting quadratic functions: A systematic review (Richard Fosu AMPONSAH, 2024, Ghana)
- **M.Ed. Mathematics Education:** Trend analysis of alignment between mathematics curriculum and examination (Kwaku Atta ADJEI, 2024, Ghana)
- **M.Ed. Mathematics Education:** Teachers' use of inquiry-based approach to facilitate geometry in mathematics classroom: A systematic review. (Roland Marvin MILLS, 2024, Ghana)
- **M.Ed. Mathematics Education:** Teachers' use of inquiry-based approach to facilitate geometry in mathematics classroom: A systematic review.(Ernestina Pokuaa AGYEMANG, 2024, Ghana)
- **M.Ed. Mathematics Education:** Teachers' use of inquiry-based approach to facilitate geometry in mathematics classroom: A systematic review. (Christiana Aba QUAYE, 2024, Ghana)
- **M.Ed. Mathematics Education:** A systematic review of teachers' use of inquiry-based in teaching geometry. (Jared Mogere ONDIGI, 2024, Ghana)
- **M.Ed. Mathematics Education:** Graphing and interpreting quadratic functions using GeoGebra (Ellen OPOKU, 2024, Ghana)
- **M.Ed. Mathematics Education:** Facilitating geometry using inquiry-based: A systematic review (Cynthia Mbama AZURE, 2024, Ghana)
- **M.Ed. Mathematics Education:** The use of GeoGebra in teaching quadratic functions: A systematic review (Dauda SEIDU, 2024, Ghana)
- **M.Ed. Mathematics Education:** Using inquiry-based learning to facilitate geometry learning: a systematic review (Abdullah Seidu, 2025, Ghana)
- **M.Ed. Mathematics Education:** Exploring basic 10 learners problem-solving skills in Geometry at Sekyere south district in Ghana (Victoria Opoku Boateng, 2025, Ghana)
- **M.Ed. Mathematics Education:** Students attitude towards mathematics and its effect on academic achievement; a case study in a selected Senior High School in Sene east District,(Siaka Issah, 2025, Ghana)
- **M.Ed. Mathematics Education:** Grade 10 learners' conceptual understanding in sketching Quadratic curves (Abraham Yeboah, 2025, Ghana)

- **M.Ed. Mathematics Education:** Conceptual understanding of quadratic Functions among basic 10 learners: a systematic review of GeoGebra-aided instruction (Kwaku Francis Owusu, 2025, Ghana)

ONGOING POSTGRADUATE SUPERVISION

COMPLETED UNDERGRADUATE SUPERVISION

- Using co-teaching and co-learning to enhance basic-9 learners understanding in pie charts. (Christian Kerker & Bright Nyarko, 2024, Ghana)
- Enhancing basic 7 learners' conceptual understanding of fractions using butterfly module (Oduro Boateng Derrick, 2024, Ghana)
- Problem based learning and achievement in algebraic expression (Tuffuor Endurance & Okyere Desmond, 2024, Ghana)
- Using Cuisenaire rods to enhance basic 7 learners' achievement in Fractions in a selected school in Kumasi (Ofori Michael & Tony Billi Bazie, 2024, Ghana)
- Using long division algorithm to improve basic-8 learners' understanding of division of numbers (Opuni Rashid, 2024, Ghana)
- Improving basic eight students' achievement in geometric transformation through Geogebra-aided instructions (Anane Bright Sarfo & Kporha Doe, 2024, Ghana)
- Enhancing student engagement in mathematics through Project-Based Learning at Bomso M/A JHS (Edem Ahedor Yao, 2024, Ghana)
- Using peer assisted analysis to improve basic nine learners' understanding of geometry (Kusi Gloria, 2024, Ghana)

INTERNAL EXAMINER FOR POSTGRADUATE THESIS (ASSESSOR)

- **M.Ed. Mathematics Education:** Enhancing word problem-solving skills in one variable equation with an activity approach at Nkawkaw Senior High school, KNUST (June, 2025)
- **M.Ed. Mathematics Education:** Assessing basic school mathematics teacher's Information Communication technology integration in the teaching and learning of mathematics in Ketu North municipal (June, 2025).
- **M.Ed. Mathematics Education:** Technology integration in mathematics education: the role of teacher professional development (June, 2025).
- **M.Ed. Mathematics Education:** Investigating the views of student teachers from Kwame Nkrumah University of science and technology on the teaching practice Program(June, 2025).
- **M.Ed. Mathematics Education:** Investigation of in-service mathematics teachers content knowledge on measures of central tendency, KNUST (June, 2025)
- **M.Ed. Mathematics Education:** Investigating the use of data-driven decision making in Technical and Vocational Senior High schools in the Oti region of Ghana, KNUST (June, 2025)
- **MPhil Mathematics Education:** Basic nine learners' knowledge of mathematics terminologies used in algebra word problems involving linear equations (June, 2025)
- **MPhil Mathematics Education:** An exploration of teachers' adaptation and implementation of the common core programme mathematics curriculum: Experiences of private school teachers in New Edubiase (June, 2025).
- **MPhil Mathematics Education:** The effectiveness of the flipped classroom model in improving students' academic performance in Mensuration (June, 2025)

SUBJECTS TAUGHT FROM JANUARY 2017 TO DATE

S/N	COURSE CODE	COURSE TITLE	SEMESTER /YEAR
<i>Kwame Nkrumah University of Technology and Technology (KNUST), Ghana</i>			
1	MATH 152	Learning teaching and applying Geometry and Handling data	
2	MATHJ 254	Learning teaching and applying Euclidean geometry and Trigonometry	
3	MATHJ 253	Learning teaching and applying Further Algebra	
4	MATHJ 253	Theories in learning mathematics	
5	MATHJ 353	Learning teaching and applying Calculus	
6	MATHJ 352	Learning, Teaching and Applying Probability and Handling Data	
7	MATHJ 351	Teaching and Assessing JHS	
8	MTHJ 452	Learning teaching and applying analytical geometry	
9	DTMA 553	Models and problem solving in mathematics	
10	DTED 553	Philosophical and Historical issues in mathematics	
11		Quantitative data analysis for educational research	
12	DTST 523	Probability and statistical inference	
13		Quantitative data analysis in education	

REFERENCES

1. Prof Ugorji I Ogbonnaya (PhD) University of Pretoria, (PhD supervisor)
Ugorjio@yahoo.com
2. Prof Akwesi Acheampong (PhD) Dean, Faculty of Educational Studies KNUST
3. Dr Patrick Swanzy (PhD), Department of Teacher Education , KNUST

