Shalmali Bandyopadhyay, Ph.D.

Assistant Professor of Mathematics
University of Tennessee at Martin
sbandyo5@utm.edu | shalmalibandyopadhyay.com | Google Scholar

Academic Positions

Tenure-Track Assistant Professor of Applied Mathematics 2023–Present
University of Tennessee at Martin

Graduate Teaching Associate (Instructor of Record) 2019–2023
University of North Carolina at Greensboro

Graduate Teaching Assistant 2018–2019
University of North Carolina at Greensboro

Education

Ph.D. in Computational Mathematics 2023
University of North Carolina at Greensboro
Dissertation: *Solvability of Nonlinear Elliptic Boundary Value Problems*
Advisor: Dr. Maya Chhetri

M.A. in Mathematics 2022
University of North Carolina at Greensboro

B.Sc. in Mathematics and Computer Science 2017
Chennai Mathematical Institute, India

Research (Supported by AMS–Simons Travel Grant, 2025–2027)

Published/Accepted Manuscripts

1. S. Bandyopadhyay and S. G. Georgiev. "Nonlinear Higher-Order Dynamic Equation with Polynomial Growth and Mixed Boundary Conditions." *Journal of Fixed Point Theory and Applications* (accepted, 2026). arXiv:2506.08808.
2. S. Bandyopadhyay, B. B. Delgado, N. Mavinga, and M. A. Onyido. "Existence results for quasimonotone elliptic systems with growth up to critical exponents." *Boletín de la Sociedad Matemática Mexicana* **32**, 91 (2026). https://doi.org/10.1007/s40590-026-00919-9.
3. S. Bandyopadhyay, T. Lewis, and N. Mavinga. "Existence of maximal and minimal weak solutions and finite difference approximations for elliptic systems with nonlinear boundary conditions." *Electronic Journal of Differential Equations* **2025**, No. 43, 1–21 (2025). https://doi.org/10.58997/ejde.2025.43.

4. S. Bandyopadhyay, M. Chhetri, B. B. Delgado, N. Mavinga, and R. Pardo. "Bifurcation and multiplicity results for elliptic problems with subcritical nonlinearity on the boundary." *Journal of Differential Equations* **411**, 28–50 (2024). https://doi.org/10.1016/j.jde.2024.07.034

5. A. Acharya, S. Bandyopadhyay, J. T. Cronin, J. Goddard II, and A. Muthunayake. "The diffusive Lotka–Volterra competition model in fragmented patches I: Coexistence." *Nonlinear Analysis: Real World Applications* **70**, 103775 (2023). https://doi.org/10.1016/j.nonrwa.2022.103775.

6. S. Bandyopadhyay, M. Chhetri, B. B. Delgado, N. Mavinga, and R. Pardo. "Maximal and minimal weak solutions for elliptic problems with nonlinearity on the boundary." *Electronic Research Archive* **30**(6), 2121–2137 (2022). https://doi.org/10.3934/era.2022107.

Submitted Manuscripts

1. S. Bandyopadhyay, T. Lewis, D. Nichols. "Numerical Approximation and Bifurcation Results for an Elliptic Problem with Superlinear Subcritical Nonlinearity on the Boundary." arXiv:2509.08990 (2025).

2. S. Bandyopadhyay, F. A. Çetinkaya, T. Cuchta. "Nonlinear elliptic Dirichlet boundary value problems on time scales." arXiv:2602.10335 (2026).

3. S. Bandyopadhyay, F. A. Çetinkaya, T. Cuchta. "Prüfer Transformation and Spectral Analysis for a Sturm–Liouville-Type Equation." *under review* (2025).

4. S. Bandyopadhyay, M. Chhetri, B. B. Delgado, N. Mavinga, R. Pardo. "Positive Solutions of Elliptic Systems with Superlinear Nonlinearities on the Boundary." arXiv:2511.04943 (2025).

5. S. Bandyopadhyay, C. J. Kunkel. "Existence Result for Singular Second Order Dynamic Equations with Mixed Boundary Conditions." arXiv:2506.16505 (2025).

Active Collaborators

- Briceyda B. Delgado, INFOTEC, Aguascalientes, Mexico 2020–
- Nsoki Mamie Mavinga, Swarthmore College 2020–
- Thomas L. Lewis, University of North Carolina at Greensboro 2023–
- Tom Cuchta, Marshall University 2024–
- Pasquale Candito, University of Reggio Calabria, Italy 2025–
- Svetlin G. Georgiev, Sorbonne University, France 2025–
- Serena Matucci, University of Florence, Italy 2025–
- Maria Amarakristi Onyido, Northern Illinois University 2025–

Selected Invited Talks

Conferences

Numerous invited talks at the Joint Mathematics Meetings (since 2023), AMS Sectional Meetings (since 2024), and AWM Research Symposium (since 2022). Selected highlights:

- Invited talk, International Conference on Difference Equations and Applications (ICDEA), Italy Summer 2026
- Three invited talks across distinct special sessions (PDE/Nonlinear Analysis, Time Scales, Difference Equations), Joint Mathematics Meetings (JMM) 2026
- Invited talk, International Conference on Difference Equations and Applications (ICDEA), China Summer 2025

- Two invited talks, 14th AIMS Conference on Differential Equations, Abu Dhabi, UAE 2024
- Invited talk, AMNS Conference, Nepal (declined; international travel restrictions) 2024

Colloquia and Seminars

- Mathematics Colloquium & TAG Seminar, Central Michigan University Spring 2026
  (by invitation of D. Chakraborty)
- PDE Seminar, Illinois Institute of Technology Spring 2026
  (by invitation of T. Leslie)
- Mathematics Colloquium, Missouri State University Spring 2026
  (by invitation of A. Biswas)
- Mathematical Biology Seminar, Iowa State University Fall 2025
  (by invitation of R. Parshad)
- PDE Seminar, Wayne State University Fall 2025
  (by invitation of F. Charro)
- Mathematics Colloquium, Appalachian State University Fall 2025
  (by invitation of J. Blazejewski)
- Math Monday Colloquium, Kenyon College Fall 2025
  (by invitation of M. Gee)
- Mathematical Biology Seminar, University of Tennessee Knoxville Spring 2024
  (by invitation of S. Lenhart)

Editorial and Review Service

Active peer reviewer for *Turkish Journal of Mathematics*, *Arab Journal of Basic and Applied Sciences*, *College Math Journal by MAA*, *Applied Mathematics — A Journal of Chinese Universities*; book chapter reviewer.

Grants and Sponsored Research

External Grants

- **MAA National Research Experience for Undergraduates Program (NREUP)** Summer 2026
  Research Mentor (with Ezra Nance; Project Director: Jason DeVito), University of Tennessee at Martin
- **AWM Mentoring Travel Grant** Summer 2026
  Mentor: Nsoki Mamie Mavinga (Swarthmore College)
- **AMS–Simons Travel Grant** 2025–2027
- **AWM–NSF Conference Participation Travel Grant** (DMS-2015440) 2024

Actively pursuing NSF grants including RUI, LEAPS-MPS, and S-STEM.

Sponsored Research

- **SLMath PROOF Program**, Berkeley, CA Summer 2026
  With M.A. Onyido and B.B. Delgado
- **BIRS Women in Analysis (WoAN) Workshop** (25w5452), Banff, Canada May 2025

- **MSRI/SLMath Summer Research Collaboration**, Berkeley, CA Summer 2022
  With M. Chhetri, B.B. Delgado, N. Mavinga, R. Pardo

Institutional Grants

UT Martin Faculty Development Grants (Summer 2024, Fall 2024, Summer 2025); College of Engineering and Natural Sciences Undergraduate Research Grant (2023–2024).
UNC Greensboro Graduate School Summer Research Grants (Summer 2019, 2020, 2021).

Undergraduate Research (Supported by MAA-NREUP, Summer 2026)

Student (Major)	Period	Research Outputs	Funding
Currently Mentoring — MAA NREUP Team, Summer 2026			
Bailyn Hall *Mathematics*	Spring 2026–	Poster (with K. Lor), MAA-SE 2026	MAA NREUP Summer 2026
Kimsear Lor *Computer Engineering & Mathematics*	Spring 2025–	Invited talk, AMS Fall Central Sectional Meeting, 2025; Poster (with B. Hall), MAA-SE 2026; Submitted manuscript: "Existence Result for Difference Equations on Non-Uniform Grids via Upper and Lower Solution Method"	UT Martin Faculty Development Grant; MAA NREUP Summer 2026
Past Mentees			
Kyle Byassee *Computer Engineering & Mathematics* Joined Master's in Predictive Analysis at Austin Peay State University	2024–2025	Poster (with K. Lynch), MAA-SE 2025; Manuscript: Upper and Lower Solution Method for Regular Discrete Second-Order Boundary Value Problems," The PUMP Journal of Undergraduate Research, 9 (2026), 198–211. https://doi.org/10.46787/pump.v9i.6129	MAA-SE Student Travel Grant
Kurt Lynch *Computer Engineering*	2024–2025	Poster (with K. Byassee), MAA-SE 2025; Manuscript: Upper and Lower Solution Method for Regular Discrete Second-Order Boundary Value Problems," The PUMP Journal of Undergraduate Research, 9 (2026), 198–211. https://doi.org/10.46787/pump.v9i.6129	MAA-SE Student Travel Grant
Larissa Renshaw *Mathematics* Joined Master's in Predictive Analysis at Austin Peay State University	2023–2024	Poster, MAA-SE 2024	CENS Undergraduate Research Grant

Talks on Undergraduate Research Mentoring

- MAA MathFest 2026
- MAA Southeastern Section Meeting 2025

Teaching (MAA ProjectNExT Fellow — Azure '24)

Courses Taught

University of Tennessee at Martin (2023–Present)

- **Upper-Division Undergraduate:** Real Analysis (MATH 481/681)†, Applied Mathematics I & II (MATH 451/651, 452/652)†, Numerical Analysis (MATH 340), Partial Differential Equations (MATH 331)
- **Lower-Division Undergraduate:** Ordinary Differential Equations (MATH 330), Calculus I (MATH 251), Precalculus (MATH 140), College Algebra (MATH 110, 100L)

†Graduate cross-listed; ran as undergraduate sections.

University of North Carolina at Greensboro (2019–2023)

- Calculus for the Life Sciences (MAT 184), Mathematics for the Life Sciences (MAT 183), Calculus I (MAT 191), Pre-Calculus (MAT 190), College Algebra (MAT 115)

Teaching Effectiveness

Student evaluations on a 5-point scale (1 = Ineffective, 5 = Very Effective). Selected results from courses with response rates $\geq 80\%$:

- **MATH 330 (Differential Equations), Fall 2025** — Overall instruction: 4.50; Communication: 4.48; Student interaction: 4.47 (n = 14, 100% response)
- **MATH 251 (Calculus I), Spring 2025** — Overall instruction: 4.65; Enthusiasm: 4.65 (n = 17, 94% response)
- **MATH 140 (Precalculus), Fall 2025 §2** — Overall instruction: 4.50; Student interaction: 4.80; Respect for Students: 5.00 (n = 20, 91% response)
- **MATH 251 growth trajectory across three semesters** — Overall instruction improved 3.56 → 3.62 → 4.65 (FA2023, FA2024, SP2025)

Selected Student Feedback

- *"I was actually engaged and interested in learning the material. No work was too hard, but no work was too easy, either. Dr. Shalmali's explanations of mathematical concepts were clear and allowed me to understand material a lot more easily than 'easier' concepts in my previous lower level math courses. The pacing of the class was also great."* — MATH 251, Fall 2023
- *"I am horrible at math and it always gives me such horrible anxiety, but Dr. B made it a calm and stress free environment for me. She is not only extremely down to earth and personable, but also very knowledgeable and helpful."* — MATH 100L, Fall 2024
- *"She explains difficult topics so well, by simplifying and chopping them up into bite-size steps. She always had a packet ready for every section at the start of a new topic and prepared us very well for exams."* — MATH 330, Fall 2025
- *"I feel like I was able to make a connection with the instructor which I have not experienced in any*

other class." — MATH 251, Spring 2025

Invited Talk on Teaching Pedagogy

- Invited talk on AI-resistant assessment design in mathematics, MAA Southeastern Section Meeting 2026

Service

Service to the Institution — University of Tennessee at Martin

Currently Serving

- Faculty Research and Development Committee (Member) Fall 2025 – Summer 2027
- Departmental Colloquium Committee (Co-Chair) 2024–
- Planning and Advisory Committee 2025–
- Applied Mathematics Textbook Committee 2023–
- Departmental Library Liaison 2024–

Past Service

- 5-Year Program Review Committee for Political Science (Member) Spring 2026
- 5-Year Program Review Committee for Interdisciplinary Studies (Chair) Spring 2025
- Calculus Course Coordinator and Textbook Committee (Chair) 2024–2025
- UT Martin Strategic Plan Goal 1: Enrollment (Member) Fall 2024
- Scholarship and Award Committee 2023–2025
- Tennessee Middle School Math Contest 2024–2025
- Faculty Evaluation Committee 2023–2024
- MATH 110 Lab Revision Committee Spring 2024

Service to the Profession

- Vice Chair for Programs, MAA Southeastern Section 2025–
- MAA Section Lecturer Committee 2025–2027
- AWM MathFest Committee (by appointment of AWM President Reagan Higgins) 2026–2029
- Panelist, professional development panel on the job market for undergraduate and graduate students in mathematics, MAA MathFest 2026
- Organizer of special sessions, workshops, and panels at JMM, AMS Sectional Meetings, and the AWM Research Symposium 2025–

Professional Development

- POGIL (Process Oriented Guided Inquiry Learning) Summer Workshop Summer 2026
  Funded by UT Martin Center for Teaching and Learning Professional Development Grant
- AI Literacy Certification, UT System 2026
- Scholarship of Teaching and Learning (SoTL) Conference, UT System (selected) Summer 2025, Summer 2026

- Grant Writing Basics Certification, UT Martin Office of Research and Sponsored Programs 2025
- MAA ProjectNExT Fellow, Azure '24 Cohort 2024–2025
- Tutor Training Certificate, State of North Carolina 2020