Wandi Ding

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Education

- **Ph.D.** Applied Mathematics — University of Tennessee - Knoxville, TN 2006
  Supervised by Suzanne Lenhart
- **M.S.** Applied Mathematics — Ocean University of China, 2001
- **B.S.** Mathematics Education — Qingdao University, China, 1998

Research Interest

- **M**athematical Modeling & Optimal Control | Scientific Machine Learning and AI | Quantum Computing & QML | Mathematical & Computational Biology | Digital Twins & Precision Health |

Working Experience

- **Associate Chair of Research**, Middle Tennessee State University (MTSU) 2026 – present
- **Associate Director of Education**: QRiSE (Quantum Research, Interdisciplinary Science, and Education) Center, (MTSU) Oct. 2025 - Sep. 2026.
- **Professor**, Middle Tennessee State University (MTSU) 2018 – present
  - Faculty for the Interdisciplinary Computational and Data Science Ph.D. Program.
  - Honors Faculty.
  - M.S. Graduate Program advisor: Department of Mathematical Sciences.
- **Associate Professor**, Middle Tennessee State University 2013 – 2018
  - Graduate Faculty and Honors Faculty
  - Faculty for the Interdisciplinary Ph.D. in Computational Science Program
- **Assistant Professor**, Middle Tennessee State University 2007 – 2013
  - Faculty for the Interdisciplinary Ph.D. in Computational Science Program and Honors Faculty
- **Post Doctoral Research Associate**, University of Tennessee - Knoxville 2006 – 2007
  - Worked with Drs. Suzanne Lenhart and Louis Gross on Developing mathematical methods for optimal spatial control of disease and ecological models (supported by NSF ITR award).
- **Graduate Teaching Associate**, University of Tennessee - Knoxville 2001 – 2006
  - Undergraduate courses: Basic Calculus, Calculus I and Math for Life Science II.
  - Lab: Conducted Numerical Analysis Labs.
- **Graduate Assistant**, University of Tennessee - Knoxville Summer 2005
  - Research Experiences for Undergraduates (REU) program.

Teaching

- **Graduate courses:**
  - MATH 5251: Introduction to Analysis II
  - MATH 6200: Real Analysis I
  - MATH 6250: Real Analysis II
  - MATH 6260: Advanced Differential Equations I

- MATH 6601: Problems in Advanced Calculus
- MATH 6612 - Problems in Mathematics (The Feynman Lectures on Physics)
- COMS 7800: Teaching Internship
- COMS 7950: Research Seminar in Computational Science

◦ **Undergraduate Courses:**

◦ **Major Courses:**

– MATH 1910: Calculus I
– MATH 1920: Calculus II
– MATH 3110: Calculus III
– MATH 3120: Differential Equations I
– MATH 3260: Differential Equations II
– MATH 4230: Vector Analysis
– MATH 4250/5250: Introduction to Analysis I
– MATH 4601: Complex Analysis
– MATH 4602: Problems in Mathematics
– MATH 5600: Problems in Contemporary Mathematics

◦ **General Education Courses:**

– MATH 1010-H: Mathematics for General Studies for Honors
– MATH 1530: Applied Statistics
– MATH 1630: College Mathematics for Managerial, Social, and Life Sc
– MATH 1720: Plane Trigonometry
– MATH 1810: Applied Calculus I
– MATH 2110: Data Analysis

PUBLICATIONS ◦ **EDITED VOLUMES [4]:**

- Guest Editor: W. Ding, R. Leander, and Z. Shuai. Special issue on mathematical biology, differential equations, and optimal control: In honor of Suzanne Lenhart on her 70th birthday, **Numerical Algebra, Control and Optimization**, vol 18, pp i-ii, 2026.
- Guest Editors: W. Ding, J. Phillips, Z. Qu and R. Zaretzki. Special Issue: Machine Learning, Mathematical and Statistical Modeling for Systems Biology, **Mathematical Biosciences and Engineering**.
  `http://www.aimspress.com/mbe/article/6087/special-articles`, 2022-23.
- Guest Editors: Ding, Wandi; Kang, Yun; Mubayi, Anuj.
  Special Issue: Mathematical modeling and analysis of social and ecological determinants for the dynamics of infectious diseases and public health policies. **Math. Biosci. Eng.** 18 (2021), no. 6, 8535–8537.
- Guest Editors: Rachel Leander, Wandi Ding and Rene Salinas.
  Special Issue Dedicated to Suzanne Lenhart, **Journal of Natural Resource Modeling**, 31:4, 2018.

◦ **REFEREED [25]:**

- Wenjing Zhang, Wandi Ding, Huaiping Zhu, From Forward-Backward Sweep to Backpropagation for Optimal Control in Tumor-Immune Dynamics, **J Math Biol** (2026) 93:63, DOI: `10.1007/s00285-026-02475-2`.
- P Klockenkemper, F Agusto, W Ding, G McGee, R Leander, Modeling the impact of host heterogeneity on the risk and dynamics of a West Nile virus epidemic, **Mathematical Biosciences and Engineering** 23 (7), 1926-1970, 2026.
- X. Zhao, Y. Wu, R. Leander, W. Ding and S. Lenhart. Optimal control of treatment in a free boundary problem modeling multilayered tumor growth, **SIAM Journal on Control and Optimization** 64 (3), 1068-1098, 2026. `https://doi.org/10.1137/24M167604`

- Y. Wu, X. Zhao, R. Leander and W. Ding. Optimal control of a free boundary tumor growth model, **Evolution Equations and Control Theory**, Volume 14, Issue 6: 1534-1564. 2025. Doi:10.3934/eect.2025043
- D. Wang and W. Ding, Innovative Biomarker Exploration in ASD: Combining Graph Neural Networks and Permutation Testing on fMRI Data, **NeuroImage: Reports** 5 (2), 100249, 2025. doi:10.1016/j.ynirp.2025.100249
- D. Wang, W. Ding and X. Yang. Autism Spectrum Disorder (ASD) Classification with Three Types of Correlations Based on ABIDE I Data. **Mathematical Foundations of Computing**, Vol. 8, No. 1, 113-127, 2025. https://doi:10.3934/mfc.2023042
- X Li, L Cai, W Ding, Modeling the transmission dynamics of a two-strain dengue disease with infection age, **International Journal of Biomathematics**, Volume 8, Issue 1: 113-127, 2025.https://doi.org/10.1142/S1793524524500049
- F. Agusto, D. Bond, A. Cohen, W. Ding, R. Leander and A. Royer. Optimal Impulse Control of West-Nile Virus, **AIMS Mathematics**, 7(10): 19597–19628, 2022. http://www.aimspress.com/article/doi/10.3934/math.20221075
- L. Cai, L. Bao. L. Rose, J. Summers and W. Ding. Malaria Modeling and Optimal Control Using Sterile Insect Technique and Insecticide-Treated Net, **Applicable Analysis**, 2022, VOL. 101, NO. 5, 1715–1734. https://doi.org/10.1080/00036811.2021.1999419

  Wandi Ding. Malaria Modelling, an optimal control problem. **Research Outreach**, May 17, 2022.

  https://researchoutreach.org/articles/malaria-modelling-optimal-control-problem/
- Leander RN, Wu Y, Ding W, Nelson DE, Sinkala Z.
  A model of the innate immune response to SARS-CoV-2 in the alveolar epithelium, **R. Soc. Open Sci.**, 8: 210090, 2021. https://doi.org/10.1098/rsos.210090
- Wandi Ding, Ryan Florida, Jeffery Summers, Puran Nepal and Ben Burton.
  Experience and Lessons Learned from Using SIMIODE Modeling Scenarios, **PRIMUS**, 29:6, 571-583, 2019. DOI: 10.1080/10511970.2018.1488318
- Wandi Ding and Glenn F. Webb.
  Optimal control applied to community-acquired methicillin-resistant Staphylococcus aureus in hospitals, **Journal of Biological Dynamics**, 11:sup1, 65-78, 2017.
- James B. Hayes, Linda M. Sircy, Lauren E. Heusinkveld, Wandi Ding, Rachel N. Leander, Erin E. McClelland and David E. Nelson.
  Modulation of macrophage inflammatory NF-kB signaling by intracellular Cryptococcus neoformans, **Journal of Biological Chemistry**, 291:30, 15614-15627, 2016.
  DOI: 10.1074/jbc.M116.738187
- Orou G. Gaoue, Jiang Jiang, Wandi Ding, Folashade B. Agusto and Suzanne Lenhart.
  Optimal harvesting strategies for timber and non-timber forest products in tropical ecosystems, **Theoretical Ecology**, 9:3, 287-297, 2016. DOI: 10.1007/s12080-015-0286-4
- Hui Feng, Huili Ma and Wandi Ding.
  Global asymptotic behavior of positive solutions for exponential form difference equations with three parameters, **Journal of Applied Analysis and Computation**, 6:3, 600-606, 2016. DOI: 10.11948/2016041
- Huili Ma, Hui Feng, Jiaofeng Wang and Wandi Ding.
  Boundedness and asymptotic behavior of positive solutions for difference equations of exponential form, **Journal of Nonlinear Science and Applications** 8:5, 893-899, 2015.
- Wandi Ding.
  Fishery Harvesting: Atlantic Cod, Wandi Ding (2015), "1-70-T-FisheryHarvest," Teacher Version Modeling Scenario at https://www.simiode.org/resources/1319, and Student Version at https://www.simiode.org/resources/1318.
- Wandi Ding, Suzanne Lenhart and Horst Behncke.
  Discrete Time Optimal Harvesting of Fish Populations with Age Structure, **Letters in Biomathematics**, 1:2, 193-207, 2014. DOI: 10.1080/23737867.2014.11414480

- Wandi Ding, Raymond Hendon, Brandon Cathey, Evan Lancaster and Robert Germick.
  Discrete Time Optimal Control Applied to Pest Control Problems, **Involve, a Journal of Mathematics**, 7-4, 479-489, 2014.
- Wandi Ding, Volodymyr Hrynkiv and Xiaoyu Mu.
  Optimal Control Applied to Native-Invasive Species Competition via a PDE Model, **Electronic Journal of Differential Equations**, Vol. 2012, 237:1-18, 2012.
- Wandi Ding and Suzanne Lenhart.
  Introduction to Optimal Control for Discrete Time Models with an Application to Disease Modeling, Modeling Paradigms and Analysis of Disease Transmission Models, 109-119, **DIMACS Ser. Discrete Math. Theoret. Comput. Sci., 75, Amer. Math. Soc.**, Providence, RI, 2010.
- Wandi Ding, Heather Finotti, Suzanne Lenhart, Yuan Lou and Yuquan Ye.
  Optimal Control of the Growth Coefficient on a Steady State Population Model. **Nonlinear Anal. Real World Appl.** 11, 688-704, 2010.
- Wandi Ding and Suzanne Lenhart.
  Optimal Harvesting of a Spatially Explicit Fishery Model. **Natural Resource Modeling**, 22:2, 173-211, May, 2009.
- Wandi Ding, Louis J. Gross, Keith Langston, Suzanne Lenhart and Leslie A. Real.
  Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid. **Journal of Biological Dynamics**, 1:4, 379-393, October, 2007.
- Wandi Ding.
  Optimal Control of Hybrid ODE Systems with Application to a Tick Disease Model. **Mathematical Biosciences and Engineering**, 4:4, 633-659, October, 2007.

Technical Report [2]

- **B**rad Bartel, Wandi Ding, Jackie Eller, Judith Iriarte-Gross, Karen Petersen, Gretchen Webber, Michael Hein, Denielle Meyerink.
  A Catalyst to Advance the Participation and Advancement of Women in Academic STEM Careers at Middle Tennessee State University NSF: HRD-1409638, 2017.
- **M**ellisa Choi. Natalie Almond, Wandi Ding, Xiaochuan Li, Xingtao Liu, Steven Rusnica, Ismael Velzquez-Ramrez, Emily Lada, Fazafumi Ito, Michael Horton.
  Mobile Sensing of Aerosolized Chemical and Biological Agents. The Center for Research in Scientific Computation (**CRSC**) Technical Report, 2004.

Submitted Work

- **D**. Wang, **W. Ding** and W. Zhang. Oracle-Efficient Coordinate Selection for Sparse Lasso via Grover-Inspired Search, submitted 2026.
- **Y**ohannes Abate, Victor Acosta, Alessandro Alabastri, Mehmet Aydeniz, Viktoriia E Babicheva, Lincoln D Carr, I Chen, **Wandi Ding**, Tara Drake, Mattias Fitzpatrick, Kai-Mei C Fu, Jay Gupta, Kaden RA Hazzard, Sophia E Hayes, Jin Hu, Hilary M Hurst, Sohrab Ismail-Beigi, Ehsan Khatami, Junichiro Kono, Cheng-Yu Lai, Xiuling Li, Yingmei Liu, Sara Mouradian, Kater Murch, Borja Peropadre, Zoe Phillips, Daniela R Radu, Akshay Sawhney, James Saslow, James Scoville, Meenakshi Singh, George Siopsis, David Weld, Chee Wei Wong.
  Graduate Training in Quantum Information Science and Engineering: Lessons, Challenges, and a Roadmap from the NSF Research Traineeship Programs, submitted 2026.
- **H**ong Qin; Jude Kong; **Wandi Ding**; Ramneek Ahluwalia; Christo El Morr; Zeynep Engin; Jake Okechukwu Effoduh; Rebecca Hwa; Serena Jingchuan Guo; Laleh Seyyed-Kalantari; Sylvia Kiwuwa Muyingo; Candace Makeda Moore; Ravi Parikh; Reva Schwartz; Dongxiao Zhu; Xiaoqian Wang; Yiye Zhang. Towards Trustworthy Artificial Intelligence for Equitable Global Health, `https://arxiv.org/abs/2309.05088`, 2023.

Work in Progress

- **T**opic Leader: A Research Community of the American Institute of Mathematics (**AIM**): Ecology Meets Infectious Disease: Modeling Complex Interactions, 2025 - 2026.
- **S**cientific Machine Learning, Dynamical Systems, and Optimal Control, 2026.

- **AI**-enabled Scientific Discovery, 2026.
- **Q**uantum-enabled Scientific Discovery, Digital Twins, 2026.
- **Q**uantum biology, 2026.

GRANTS & TRAVEL AWARDS

- **PI: NSF DGE #2510274**: NRT-QISE-AI: Middle Tennessee Interdisciplinary Graduate Research and Training in Quantum Information Science and AI, (Co-PIs: Hanna Terletska, Joshua Phillips, Jing Kong, Abdul-Qayyum Khaliq; Senior Personnel: Donglin Wang and Kritagya Upadhyay), $2,000,000, 2025 — 2030.
- **Co-PI: NSF DMS #2234176**: Shanks Workshop on Advances in Mathematical and Theoretical Biology, (PI: X. Zhao, co-PIs: M. Horn, W. Ding, P. Hinow and X. Huo), $27,000, 2023–24.
- **PI: NSF DMS #1757493**: REU Site: Computational Modeling and Simulation in Applied Sciences (co-PIs: R. Leander, W. Robertson and J. Phillips), $241,470, 2018–2023.
- **Co-PI: NSF ADVANCE IT-Catalyst (NSF HRD-1409638)**: A Catalyst to ADVANCE the Participation and Advancement of Women in Academic STEM Careers at Middle Tennessee State University (PI: B. Bartel, co-PIs: J. Iriarte-Gross, W. Ding, J. Eller and K. Petersen), $195,002, 2014–18.
- **M**TSU Grants/Awards:
  - **NIA**: Non-Instructional Assignment Grant (Sabbatical leave), Fall 2020.
  - MTSU LT&ITC Faculty Learning Community: Mid-Career Faculty Development Program, (with D. Raffo, G. Webber, R. Henderson, R. Otter and T. Brinthaupt), 2014, $7,500.
  - MTSU Instructional Technologies Innovation Grant (with Z. Sinkala and R. Leander), 2014, $5,892.
  - MTSU Instructional Evaluation and Development Grant, 2011, $750.
  - Faculty Research and Creative Activity Award, MTSU, August 2009 – May 2010, $5,000.
  - NSF STEP^{MT} (Stepping Up Undergraduate Research) Summer Research, MTSU, June – July 2009, $17,500.
  - Faculty Research and Creative Activity Award, MTSU, August 2008 – May 2009, $6,300.
  - MTSU Distinguished Lecture Fund, 2009, 2010, 2011, 2012, $3,250.
- **T**ravel Grants/Awards:
  - 2024 **SIAM Quantum** Intersections Convening, Tysons, Virginia, October 7-9, 2024.
  - **Moffitt Cancer Center** Integrated Mathematical Oncology (**IMO**) Travel Awards, IMO Workshop 9: Tumor Board Evolution, 2019.
  - Society for Mathematical Biology (**SMB**) grant to support our special session in the **AMS** Southeastern Spring Sectional Meeting (March 27-29, 2015), 2014, $2,000.
  - Society for Mathematical Biology (**SMB**) Travel grant, SMB, 2011, $750.
  - Society of Industrial and Applied Mathematics (**SIAM**) Postdoc/Early Career Travel Award, SIAM-NSF, 2010, $885.
  - Association for Women in Mathematics (**AWM**) Travel Grants for Women Researchers, AWM-NSF, 2009, $1,488.
  - Travel Awards for Association for Women in Mathematics (**AWM**) Workshops for Women Graduate Students and Recent PhDs, 2004, 2005 and 2007.

EDITORIAL BOARDS

- **Associate Editor**: International Journal of Computer Mathematics, 2022 – present.
- **Editorial Board**: PRIMUS, 2023 - present.
- **Editor:** BAREKENG: Journal of Mathematics and Its Applications (Scopus-indexed), 2025–2026.
- **Guest Editor:** Mathematical Biology, Differential Equations, and Optimal Control: A special issue in honor of Suzanne Lenhart on her 70th birthday, **Numerical Algebra, Control and Optimization**, 2024.

- **Guest Editor**: Special Issue: Machine Learning, Mathematical and Statistical Modeling for Systems Biology, **Mathematical Biosciences and Engineering**, 2021–23.
- **Guest Editor**: Special Issue: Mathematical modeling and analysis of social and ecological determinants for the dynamics of infectious diseases and public health policies. **Mathematical Biosciences and Engineering**, 2020–21.
- **Guest Editor**: Special Issue Dedicated to the 65th Birthday of Suzanne Lenhart, **Journal of Natural Resource Modeling**, 2017–18.
- **Editor**: Society for Mathematical Biology (**SMB**) Digest, 2013 – 2019.
- **Editorial Board**: American Research Journal of Mathematics, 2017 – present.
- **Editor**: International Journal of Mathematics and Statistics, 2014 – 2018.

Referee

- Books
  - *Pearson Education*
  - *McGraw-Hill Education*
- Journals [35]
  - *SIAM Journal on Applied Mathematics*
  - *SIAM Journal on Control and Optimization*
  - *Journal of Mathematical Analysis and Applications*
  - *Journal of Theoretical Biology*
  - *Journal of Mathematical Biology*
  - *Optimal Control Applications and Methods*
  - *Mathematical Biosciences*
  - *Stochastic Environmental Research and Risk Assessment*
  - *Ecological Applications*
  - *Applicable Analysis*
  - *Natural Resource Modeling*
  - *Mathematical Biosciences and Engineering*
  - *Journal of Optimization Theory and Applications*
  - *International Journal of Computer Mathematics*
  - *Journal of Biological Dynamics*
  - *Journal of Biological Systems*
  - *ESAIM: Control, Optimisation and Calculus of Variations*
  - *Numerical Algebra, Control and Optimization*
  - *Discrete and Continuous Dynamical Systems Series B.*
  - *International Journal of Dynamics and Control*
  - *Applied Mathematical Modeling*
  - *Environment and Natural Resources Research*
  - *Mathematical Methods in the Applied Sciences*
  - *International Journal of Dynamics and Control*
  - *International Journal of Biomathematics*
  - *Journal of Applied Animal Welfare Science*
  - *Communications in Mathematics and Applications*
  - *La Matematica. Official Journal of the Association for Women in Mathematics.*
  - *Journal of Nonlinear Science and Applications*

- *BioSystems*
- *PRIMUS*
- *Spora: A Journal of Biomathematics*
- *Chaos, Solitons & Fractals*
- *Mathematical Control and Related Fields*
- *Journal of Applied Mathematics*
- *Mathematics and Statistics*

CONFERENCE /SPECIAL SESSION ORGANIZED [9]

- **AMS** Special Session on Dynamics and Management in Disease or Ecological Models (associated with **Gibbs Lecture by Suzanne Lenhart**), at the 2024 **Joint Mathematics Meetings** in San Francisco, CA, January 4-5, 2024. (Co-organized with S. Lenhart and C. Edholm)
- **A** satellite session "Fairness in Machine Intelligence for Global Health (FairMI4GH)" of the **2023 annual meeting of the Consortium of Universities for Global Health** (CUGH), April 3rd, 2023. (Co-organized with Hong Qin and Jude Kong)
- **AMS** Spring Eastern Virtual Sectional Meeting Special Session on Modeling, Analysis, and Control of Populations Impacted by Disease and Invasion, April 1-2, 2023. (with R. Leander)
- **Shanks Workshop** on Advances in Mathematical and Theoretical, Vanderbilt University, March 17-19, 2023. (with X. Zhao, M. Horn, P. Hinow and X. Huo)
- **SIMIODE** (Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations) **EXPO**, February 10-12, 2023. (with B. Winkel, Y. Ma and L. Noble)
- **A**merican Mathematical Society (**AMS**) Southeastern Spring Sectional Meeting, Special Session on Recent Trends in Mathematical Biology, Huntsville, AL, March 27-29, 2015. (Co-organized with Z. Sinkala)
- **S**ociety for Industrial and Applied Mathematics (**SIAM**) Conference on the Life Sciences Mini-Symposium, Mathematical Modeling and Control of Ecological and Epidemiological Problems, Charlotte, NC, August 4-7, 2014. (Co-organized with R. Leander)
- **A**merican Mathematical Society (**AMS**) Sectional Meeting, Special Session on Diversity in Modeling and Optimal Control: A Celebration of Suzanne Lenhart's 60th Birthday, Knoxville, TN, March 21-23, 2014. (Co-organized with R. Fister)
- **A**merican Mathematical Society (**AMS**) Special Session at the Joint Mathematics Meetings: Control of Biological and Physical Systems, Boston January 2012. (Chair and Co-organized with S. Lenhart and V. Hrynkiv)

VISITING SCHOLARS

- **D**r. Huili Ma, Northwest Normal University, China, 2014–2015
- **D**r. Yan Hu, Shanghai University of Electric Power, China, 2015–2016

SERVICE TO THE STUDENTS

- **F**aculty Coach: National Student Competition Using Differential Equations Modeling - SCUDEM, 2017–18.
  Team Members: Jeffery Summers, Ryan Florida, Ben Burton, Puran Nepal.
- **D**octoral Dissertation Committees
  - Paul Klockenkemper, **co-mentor** with R. Leander, 2026.
  - Yuan Chen, 2026
  - Jie Long 2024
  - Ebenezer Oluwasakin 2024
  - Thomas Torku 2023
  - Arthur Williams 2022
  - Kayode D. Olumoyin 2022

- Sujani Ambahera 2022
- Ashlin Harris 2021
- Harold A. Lay Jr. 2019
- Richard Ewool 2016
- Harish Bhatt 2016
- Zach Spears 2014

◦ **M**.S. Thesis Committees

- Paul Klockenkemper 2024
- Ronald Balint 2023
- Greg Owanga 2023
- Lekha Iraloor Neelakantan 2022
- Zachariah Thomas 2021
- Lin Feng 2021
- Ziren Chen 2021
- Anthony Krueger 2021
- Asma Alshehri 2019
- Jacy Zanussi 2019
- Sathyanarayanan Rengaswami 2017
- Genesis Spears 2017
- Milton Sager 2014
- Akwasi Kusi-Appiah 2010

◦ **T**eaching Internship

- Spring 2013: Harish Bhatt

◦ **U**ndergraduate Research

- Alex Taylor
  The Cost of Collapsing Colonies: A Honeybee Heat Stress Financial Model, 2026.
- Elijah Atkins (co-advised with Dr. D. Wang)
  Major Depressive Disorder (MDD) Classification Using Three Types of Correlations and Biomarker Exploration.
  MTSU **AMPLIFY** Interdisciplinary Scholarship Program, 2023–24.
  VBISP: Vanderbilt Biomedical Informatics Summer Program, summer 2024.
- Brady Nichols, Sally Vogel (co-advised with Dr. R. Leander)
  An Early-Season Model of West Nile Virus in Birds of Rutherford County, TN, 2022 (Project funded by **NSF DMS #1757493**)
- Sawyer Griffy, Matthew Senese (Ph.D. student at University of Notre Dame) (co-advised with Dr. R. Leander)
  A Model for Rocky Mountain Spotted Fever with Co-feeding and Vertical Transmission, 2022. (Project funded by **NSF DMS #1757493**)
- Adira Cohen (Ph.D. student at North Carolina State University), Daniel Bond (Ph.D. student at University of Tennessee - Knoxville), Allis Royer (co-advised with Dr. R. Leander).
  Optimal Impulse Control of West-Nile Virus, 2021. (Project funded by **NSF DMS #1757493**)
  Presentations:
  - Adira Cohen presented at the Council on Undergraduate Research's **CUR** 2021 Research Experiences for Undergraduates **REU** symposium, October 25, 2021. Virtual.

  - Daniel Bond presented at the 2022 Emerging Researchers National (**ERN**) Conference in STEM, February 3-5, 2022.

- Shivam Patel (co-advised with Dr. R. Leander).

  Quasi-Steady-State Models of Ligand Receptor Binding, 2021. (Project funded by **NSF DMS #1757493**)

- Anna Marie Czarnik.

  Plant Growth and Disease Detection (PGDD) model using Neural Network for Image Recognition, fall 2019.

- Sosina Tolossa.

  Agent/Individual Based Models for Wildfires, fall 2019. (Project funded by MTSU Undergraduate Research Experience and Creative Activity (**URECA**) grant 2019)

- Lanjing Bao (Georgia Gwinnett College, Ph.D. student at Georgia State University) and Logan Rose (Marshall University, Ph.D. student at University of Kentucky).

  Mathematical Modeling and Optimal Control for Malaria Transmission Using Sterile Mosquitoes Technique and Bednets, 2019. (Project funded by **NSF DMS #1757493**)

  Presentations:

  - Logan Rose presented at Council on Undergraduate Research's (**CUR**) 2019 Research Experiences for Undergraduates (**REU**) Symposium, Alexandria, VA, October 27-28, 2019.
  - Lanjing Bao presented at the National Institute of Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, November 16-17, 2019.
  - Lanjing Bao will present at 2020 Emerging Researchers National (**ERN**) Conference in STEM, Washington, D.C., February 6-8, 2020.

- Jeffery Summers.

  Mathematical Modeling and Optimal Control of Sterile Mosquitoes for Malaria, 2017. (Project funded by MTSU Undergraduate Research Experience and Creative Activity (**URECA**) grant 2017)

  Presentation:

  - Jeffery Summers presented at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Nov. 11-12, 2017.

- Ryan Florida.

  Mathematical Modeling and Control of Community-associated and Hospital-associated Methicillin-Resistant Staphylococcus Aureus (MRSA) transmission in community settings, 2017.

  Presentation:

  - Ryan Florida presented at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Nov. 11-12, 2017.

- Cori Hendon, Brandon Cathey, Evan Lancaster (high school teacher) and Robert Germick (high school senior) for **NSF STEP**$^{\text{MT}}$ Summer Research, 2009.

  Presentation:

  - Raymond Hendon and Evan Lancaster gave poster presentations at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Oct. 23-24, 2009.
  - Brandon Cathey gave presentation at the 3rd Undergraduate Mathematics Conference at the University of Tennessee, Knoxville, TN, April 18, 2010.

  Publication with Undergraduate Students:

  - F. Agusto, D. Bond, A. Cohen, W. Ding, R. Leander and A. Royer. Optimal Impulse Control of West-Nile Virus, accepted by **AIMS Mathematics** 2022.
  - L. Cai, L. Bao. L. Rose, J. Summers and W. Ding. Malaria Modeling and Optimal Control Using Sterile Insect Technique and Insecticide-Treated Net, **Applicable Analysis**, 2022, VOL. 101, NO. 5, 1715–1734. `https://doi.org/10.1080/00036811.2021.1999419`
  - Wandi Ding, Ryan Florida, Jeffery Summers, Puran Nepal and Ben Burton. *Experience and Lessons Learned from Using SIMIODE Modeling Scenarios*, **PRIMUS**, 29:6, 571-583, 2019.

  - James B. Hayes, Linda M. Sircy, Lauren E. Heusinkveld, Wandi Ding, Rachel N. Leander, Erin E. McClelland and David E. Nelson.
    Modulation of macrophage inflammatory NF-kB signaling by intracellular Cryptococcus neoformans, **Journal of Biological Chemistry**, 291:30, 15614-15627, 2016.
  - Wandi Ding, Raymond Hendon, Brandon Cathey, Evan Lancaster and Robert Germick.
    Discrete Time Optimal Control Applied to Pest Control Problems, **Involve, a Journal of Mathematics** 7-4, 479-489, 2014.

- **I**ndependent Study (Undergraduate and Graduate Students)
  - Fall 2022: Problems in Mathematics - Math 4602: Differential Equations I, Zachary Staton.
  - Spring 2020: Problems in Mathematics - MATH 6612: The Feynman Lectures on Physics, Caleb Rowland.
  - Fall 2019: Analysis II - Math 6200, Stephen Elrod.
  - Spring 2019: Analysis I - Math 6190, Stephen Elrod.
  - Fall 2014: Analysis II - Math 6200, Anna Bachstein and Brian Phillip Frazier.
  - Spring 2013: Theory of Calculus - Math 4250, Alan Smith.
  - Fall 2011: Analysis II - Math 6200, Diego Cadavid, Jay Dalrymple, Matthew Perry, and Dalal Awadh Alrowaili.
- **O**ffered MSE (Math Science and Education) Preliminary Examination for Ph.D. students
  - Ameneh Kassaee (Fall 2014)
- **O**ffered Comprehensive Exam for M.S. Graduate Students (Analysis I, Advanced Differential Equations I)
  - Vijayalakshmi Singavarapu (Spring 2021)
  - Matt Bartha (Fall 2020)
  - Jordan Kirby, Feng Lin, and Ziren Chen (Spring 2019)
  - Anna Bachstein (Fall 2015)
  - Ibrahim Gurgil (Summer 2015)
  - Brian Phillip Frazier, Sultan Alyodi (Spring 2015)
  - Sara Nasab (Fall 2014)
  - Jennifer Williams (Spring 2014)
  - Brittany Smith, Natasha Gerstenchlager, Houston Higss (Fall 2013)
  - Amanda Hull, Philip Akoto, Mohammad Safder Rizwan Khan (Spring 2013)
  - Jay Dalrymple, Nana Boateng, Dalal Alrowaili, Yingwei Li (Spring 2012)
  - Jeffrey Pair, Diego Calle Cadavid (Fall 2012)

Selected Invited Presentations

2026

- **T**he Tenth International Conference on Mathematical Modeling & Analysis of Populations in Biological Systems (ICMA X), U of Maryland, October 24-25, 2026.

2025-26

- **T**opic Leader: A Research Community of the American Institute of Mathematics (**AIM**): Ecology Meets Infectious Disease: Modeling Complex Interactions, 2025 – 2026.

2024

- **B**ridging Mathematics, Biology, and Quantum: A Journey Through Modeling and Innovations, August 10, 2024.
- **M**TSU **AMPLIFY** Interdisciplinary Scholarship Program: "Mathematical Biology, Optimal Control and Deep Learning for Biological Applications," April 5, 2024.

2023

- **S**pecial Session on "Advances in Modeling Mosquito-borne Disease Dynamics and Control Methods" at the 2023 **Joint Mathematics Meetings** in Boston, MA, January 4-7, 2023.

2022

- **V**irginia Tech Math Biology Seminar, October 19, 2022. Virtual.

  Special Session on "Recent Advances in Mathematical Biology" at the **AMS** Sectional Meeting at the University of Tennessee at Chattanooga in Chattanooga, TN. October 15-16, 2022.

- **UCR-ICQMB** Center (University of California - Riverside: Interdisciplinary Center for Quantitative Modeling in Biology) Seminar, March 8, 2022. Virtual.

2021

- **A**nalysis and Applied Mathematics seminar talk at Kennesaw State Universtiy, November 4, 2021. Virtual.

- **X**inyang Normal University, China. October 30, 2021. Virtual.

- **B**iomathematics seminar talk at Texas Tech University. Oct. 26, 2021. Virtual.

- **S**ociety for Mathematical Biology (**SMB**) Annual Conference, Minisymposium: From Primate to Vectors to Humans: Understanding the underlying mechanisms of disease transmission and control. June 13-17, 2021. Virtual.

- **J**oint Mathematics Meetings (**JMM**) meeting, **AMS** Special Session on Advances in Mathematical Biology, Jan 6-9, 2021, Virtual.

2020

- **AMS** Fall Southeastern Virtual Sectional Meeting, Special Session on Modern Applied Analysis. Oct. 10-11, 2020.

2019

- **U**niversity of Alabama – Huntsville Mathematical Sciences Colloquium, November 1, 2019.

- **S**eventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (**ICMA VII**), Arizona State University, October 12-14, 2019.

2018

- **T**he **Fields Institute**e for Research in Mathematical Sciences Workshop on Human-Environment Systems: Feedback and Management, Toronto, Canada, March 5-9, 2018.

- **AMS** Special Session on Modeling in Differential Equations - High School, Two-Year College, Four-Year Institution as part of the Joint Mathematics Meetings (**JMM**), San Diego CA, January 10-13, 2018.

2017

- **S**ixth International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (**ICMA VI**), University of Arizona, October 20-22, 2017.

- **S**imon A. Levin Mathematical, Computational and Modeling Sciences Center, Arizona State University, October 19, 2017.

- **37**th Southeastern-Atlantic Regional Conference on Differential Equations (**SEARCDE**), Kennesaw, GA, October 7-8, 2017. **Chair** of the Parallel Session Sunday 1:30-2:50 pm

- **V**anderbilt University, Department of Mathematics, PDE seminar, September 8, 2017.

- **B**anff International Research Station for Mathematical Innovation and Discovery (**BIRS**) workshop on Women in Control: New Trends in Infinite Dimensions, Banff, Canada, July 16-21, 2017.

2016

- **I**nternational Conference on Reaction-Diffusion Equations and Their Applications to the Life, Social and Physical Sciences, Beijing, China, May 26-29, 2016.

2015

- **O**cean University of China, School of Mathematics Colloquium, Qingdao, China, June 9, 2015.
- **Q**ingdao University, China, School of Mathematics Colloquium, Qingdao, China, June 4, 2015.

2014

- *Society for Industrial and Applied Mathematics (***SIAM***) Conference on the Life Sciences Mini-Symposium*, Mathematical Modeling and Control of Ecological and Epidemiological Problems, Charlotte, NC, August 4-7, 2014.
- *American Mathematical Society (***AMS***) Sectional Meeting, Special Session on Diversity in Modeling and Optimal Control: A Celebration of Suzanne Lenhart's 60th Birthday*, Knoxville, TN, March 21-23, 2014.

2013

- *Mathematical Biosciences Institute (***MBI***) workshop 2 on Rapid Evolution and Sustainability*, Optimal control of models to sustain populations, Columbus, OH, October 7-11, 2013.
- *Special session "Mathematical Issues in Ecological and Epidemiological Modeling" at the South East Section of the American Mathematical Society (***AMS***) meeting*, Louisville, KY, October 5-6, 2013.

2012

- *American Mathematical Society (***AMS***) Special Session at the Joint Mathematics Meetings (JMM):* Optimal Control Applied to Native-Invasive Species Competition via a PDE model, Boston, MA, Jan. 2012.

2011

- *The Third International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (***ICMA III***)*, San Antonio, TX, Oct. 2011. "Optimal Control Applied to Native-Invasive Species Competition via a PDE model."

2010

- *2010 Society of Industrial and Applied Mathematics (***SIAM***) Conference on the Life Sciences*, Minisymposium on Optimal Control Applied to Biological Systems, Pittsburgh, PA, July, 2010. "Optimal Control Applied to Native-Invasive Population Dynamics via a PDE Model."

2009

- *The Second International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (***ICMA II***)*, Huntsville, AL, October, 2009. "Optimal Control for a Tick Disease Model Using Hybrid ODE Systems."
- *2009 Society of Industrial and Applied Mathematics (***SIAM***) Conference on Control and Its Applications*, Denver, CO, July, 2009. "Optimal Control for a Discrete Time Rabies Model on a Spatial Grid."

2008

- *American Mathematical Society (***AMS***) regional conference*, Huntsville, AL, October, 2008. "Optimal Control of Growth Coefficient on a Steady State Population Model."

2007

- *Special Session on Applied Partial Differential Equations at American Mathematical Society (***AMS***) Southeastern meeting*, Murfreesboro, TN, November, 3-4, 2007. "Optimal Harvesting of a Spatially Explicit Fishery Model."
- *Computational Science Workshop for Natural Resource Managers*, Knoxville, TN, April, 2007. "Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid."

- *Association of Women in Mathematics (***AWM***) Workshop for Women Graduate Students and Recent PhDs*, New Orleans, LA, January, 2007. "Optimal Harvesting of a Semilinear Elliptic Fishery Model."

2006

- *Society of Industrial and Applied Mathematics (***SIAM***) Annual Meeting*, Mini-symposium on Applications of Control in Biology, Boston, MA, July, 2006. "Optimal Harvesting of a Semilinear Fishery Model."
- *Computational Science Workshop for Natural Resource Managers*, Knoxville, TN, April, 2006. "Optimal Harvesting of a Semilinear Elliptic Logistic Fishery Model."

2005

- *Society of Industrial and Applied Mathematics (***SIAM***) Annual Meeting*, Mini-symposium on Control of Systems with Hybrid Features, New Orleans, LA, July, 2005. "Optimal Control of Hybrid Systems Involving ODEs with Application for a Tick-borne Disease Model."

Contributed Talks

- *2008 Annual Mathematical Association of America (***MAA***) meeting at Kentucky, Bowling Green, KY, March, 2008. "Optimal Control on Hybrid Tick Disease Model."*
- *The Joint Annual Meetings of the Society for Mathematical Biology and the Japanese Society for Mathematical Biology (***SMB & JSMB***)*, San Jose, CA, July 31-August 4, 2007. "Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid." Served as the **chair** for the contributed session of Epidemiology II.
- *Joint Mathematics Meetings (***JMM***)*, Contributed Session on Optimization and Control, San Antonio, TX, January, 2006. "Optimal Harvesting of a Semilinear Elliptic Fishery Model (preliminary report)."
- *The 25^{th} Annual Southeastern-Atlantic Regional Conference on Differential Equations (***SEARCDE25***)*, Dayton, OH, October, 2005. "Optimal Harvesting of a Semilinear Elliptic Fishery Model (preliminary report)."
- *Joint Mathematics Meetings (***JMM***)*, Contributed Session on Calculus of Variations, Atlanta, GA, January, 2005. "Optimal Control of Hybrid Systems Involving ODEs."
- *The 24^{th} Annual Southeastern-Atlantic Regional Conference on Differential Equations (***SEARCDE24***)*, Chattanooga, TN, October, 2004. "Optimal Control of Hybrid Systems Involving ODEs (preliminary report)."

Posters

- *Integrated Mathematical Oncology (IMO) Workshop 9: Tumor Board Evolution,* **Moffitt Cancer Center***, Tampa, FL, November 3-8, 2019.*
- *Conference Board of the Mathematical Sciences* **(NSF-CBMS)** *Lecture Series on Mathematical Epidemiology with Applications,* July 25-29, Johnson City, TN, 2011. "Optimal Control Applied to Native-Invasive Species Competition via a PDE Model."
- *2007 World Conference on Natural Resource Modeling*, Cape Cod, MA, June, 2007. "Optimal Harvesting of a Spatially Explicit Fishery Model."
- *Mathematical Biosciences Institute* **(MBI)** *Workshop for Young Researchers in Mathematical Biology*, Columbus, Ohio, March, 2007. "Optimal Harvesting of a Semilinear Elliptic Fishery Model."
- *Conference in Honor of Thomas I. Seidman - Advances in Control of Partial Differential Equations*, Baltimore, MA, October, 2006. "Optimal Harvesting of a Spatially Explicit Fishery Model."
- **Mathfest**, Knoxville, TN, August, 2006. "Optimal Harvesting of a Spatially Explicit Fishery Model."
- *Association of Women in Mathematics* **(AWM)** *Workshop for Women Graduate Students and Recent PhDs* New Orleans, LA, July, 2005. "Optimal Control of Hybrid Systems Involving ODEs."
- *Association of Women in Mathematics* **(AWM)** *Workshop for Women Graduate Students and Recent PhDs* Portland, OR, July, 2004. "Optimal Control of Hybrid Systems Involving ODEs (preliminary report)."

NSF ADVANCE IT-Catalyst Grant Presentations

- **P**oster. Middle Tennessee State University ADVANCE: Spotlight on Changing the Institutional Culture to Improve the Recruitment, Retention, and Advance of Women STEM Faculty, MTSU Scholars Week, March 30, 2017.
- **C**ampus Climate Survey and Focus Group Results Presentation, November, Murfreesboro, TN, 2015.
- **A**DVANCEing STEM Careers for Women at MTSU, 35th Annual Conference, Women in Higher Education in Tennessee, October 23, Murfreesboro, TN, 2015.

Honors, Awards & Leaderships

- **Associate Chair of Research**: Department of Mathematical Sciences, 2026 – present.
- Associate Director of Education: QRiSE (Quantum Research, Interdisciplinary Science, and Education) Center at MTSU, Oct 2025 – Sep 2026.
- **Co-President** for Association for Women in Science (**AWIS**) TN Chapter, 2021 – present.
- **President** (2011–12), **vice president** (2009–10), and **secretary** (2008–09, 2022–26) for the Honor Society of Phi Kappa Phi (**PKP**) at MTSU chapter.
- **Co-Director** for SIMIODE EXPO 2023, February 10-12, 2023.
- Distinguished Research Award, College of Basic and Applied Science, MTSU, 2019.
- Recognized as "a person who makes a real difference in lives of students," MTSU, 2024, 2023, 2020, 2012.
- **President**, Society of Industrial and Applied Mathematics (**SIAM**) Student Chapter, University of Tennessee, Knoxville, 2004 – 2006.
- Scholarly Activities Research Incentive Fund (SARIF), Summer 2004, University of Tennessee.
- Graduate Student Achievement Award, Department of Mathematics, University of Tennessee, Knoxville, Spring 2003.
- Science Alliance Fellowship, University of Tennessee & Oak Ridge National Laboratory (ORNL), 2001 – 2006.
- The Honorary Title of Excellent Graduate, Normal College of Qingdao University, China, July 1998.
- **S**cholarships for four consecutive years, Normal College of Qingdao University, 1994 – 1998.

Memberships

- The American Association for the Advancement of Science (**AAAS**) 2010 – present
- Association for Women in Science (**AWIS**), 2015 – present
  - **Co-President** 2021 – present
- Society of Industrial and Applied Mathematics (**SIAM**) 2004 – present
- **Lifetime** Member of The Honor Society of **Phi Kappa Phi** ($\Phi\kappa\Phi$)
- Society for Mathematical Biology (**SMB**) 2007 – present
  - SMB Subgroup on Population Dynamics, Ecology and Evolution
- Association for Women in Mathematics (**AWM**) 2008 – present
  - Member of Student Chapters Committee 2009 – 12
- Resource Modeling Association (**RMA**)
- Member of the Canadian Center for Disease Modeling (**CCDM**) global network 2021 – present
- Member of the MODELS OF INFECTIOUS DISEASE AGENT STUDY (**MIDAS**) 2021 – present
- American Mathematical Society (**AMS**) (2007 – 2019)
- American Association of University Professors (**AAUP**) (2010 – 2012)
- Member of the Murfreesboro Art League (**MAL**)

Services

◦ Professional Services

Leaderships

- **Co-President** of Association for Women in Science (**AWIS**) Tennessee Chapter, 2021 – present.
- **Co-Director** of Systematic Initiative for Modeling Investigations and Opportunities with Differential Equations **(SIMIODE) EXPO** 2023.
- **President** (2011–12), Vice President (2009–10) and Secretary (2008–09, 2022–26), member-at-large (2026-present) for The Honor Society of **Phi Kappa Phi** MTSU Chapter.
- **President**, Society of Industrial and Applied Mathematics (**SIAM**) Student Chapter, University of Tennessee, Knoxville, 2004–06.

Services

- Program Committee: Association for the Advancement of Artificial Intelligence (**AAAI**) 2024 Fall Symposium on **Machine Intelligence for Equitable Global Health** (MI4EGH), Arlington, Virginia. November 7-9, 2024. `https://sites.google.com/aggies.ncat.edu/2024-mi4egh/home`
- **NSF Panel Reviewer** 2020, 2022, 2024.
- Member of the Canadian Center for Disease Modeling (**CCDM**) global netowork, 2022 – present.
- **Board of Contributing Advisors** for Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations (**SIMIODE**), `https://www.simiode.org,` 2017 – present.
- Judge for **SIMIODE** Challenge Using Differential Equations Modeling (**SCUDEM**) VI competition, November 14–December 5, 2021. `https://www.simiode.org/scudem`
- **External Reviewer** for Tenure and Promotion Applications:
  - University of Lousiana 2024.
  - Loyola Marymount University 2023.
  - University of Washington Bothell 2019.
  - Duquesne University 2016.
  - University of South Carolina Beaufort 2015.
- Reviewer for Tennessee Board of Regions (**TBR**) Diversity Research Grant, 2010.
- Member of Association for Women in Mathematics (**AWM**) Student Chapters Committee 2009–12.
- Mentor for Association for Women in Mathematics (**AWM**) mentor network.

◦ Public Services

- Invited Guest Speaker: Ada Lovelace Day celebration, Cumberland University, October 13, 2022.
- Invited Panel speaker for Volunteer State Community College Expanding Your Horizon (**EYH**), October 7, Gallatin, TN, 2017.
- Mentor for Million Women Mentors (**MWM**) (Advancing Women and Girls in STEM Careers through Mentoring), 2015 – present.
- Board Member of MTSU Women in Science, Technology, Engineering and Mathematics (**WISTEM**) Center , 2014 – 2017.
- Member of MTSU Women in Science, Technology, Engineering and Mathematics (**WISTEM**) Center campus planning committee, 2010–11.
- Algebra I training for high school teachers: taught
  - Conditional Probability, summer 2011
  - Solving Equations and Inequalities, summer 2013
- Member of MTSU Expand Your Horizon (**EYH**) executive committee 2008. Engage in helping middle and high school girls get interested in Science and Mathematics.

◦ University Services

- **Department:**
  - Associate Chair, Department of Mathematical Sciences, 2026 – present.
  - Applied/Computational Math Faculty Search Committee, Department of Mathematical Sciences, 2025 – 26.
  - Actuarial Science Search Committee 2019 – 20.
  - Department Chair Search Committee 2017 – 18.
  - MS Program Review Committee 2015 – 16.
  - *Graduate Program Policy Committee* 2015 – 18.
  - **Chair**: Calculus/Precalculus Committee 2014 – 16.
  - Tenure-Promotion Guideline Committee 2013 – 14.
  - Applied Mathematics Search Committee 2011 – 12.
  - **Faculty Advisor** for **Pi Mu Epsilon** - Mathematics Honor Fraternity 2011 – 12.
  - Undergraduate Program Review Committee 2009 – 10.
  - Biomathematics/Statistics seminar organizer 2009 – 15.
  - Calculus committee 2010 – 11.
  - McNair Program Liaison 2008 – 11.
  - Research & Scholarship Committee, 2007 – 11 2012 – 14, 2019 – 20.
  - Industrial Curriculum Group Committee 2007 – 17.
  - SCIENTIA Board of Faculty Facilitator 2007 – 09.
- **College:**
  - **Associate Director** of Education (graduate track), Quantum Research Interdisciplinary Science and Education Center (QRiSE). Oct 2025 – Sep 2026.
  - Coordinator for MTSU AMPLIFY Interdisciplinary Scholarship Program, 2023 – present.
  - Computational Science Program (COMS) Student Evaluation Committee 2013 – 2016.
  - Computational Science Program (COMS) Curriculum Committee 2011 – 2016.
  - Computational Science Program (COMS) seminar organizer 2010 – 2015.
  - College of Basic and Applied Sciences (CBAS) Scholars' Day Committee and Representative for the Department of Mathematical Sciences, April 2011.
  - Academic Appeals Subcommittee for the College of Basic and Applied Sciences 2008 – 10.
- **University:**
  - University Committee on Sponsored Scholarship (**UCSS**) 2024 – 26.
  - Athletic Compliance Committee 2021 – 23.
  - **Faculty Appeals** Committee 2019 – 21.
  - **Career Achievement Award** Committee 2014 – 2016.
  - **National Women's History Month Planning** Committee 2012 – 13.
  - Committee on Admissions and Standards 2012 – 13.
  - Faculty Development Committee 2012 – 13.
  - Library Committee 2010 – 11.

COMPUTER SKILLS

- MATLAB, Python, Mathematica, Julia, MAPLE, Minitab, HTML, LaTeX, Microsoft Office.

PROFESSIONAL DEVELOPMENT [67]

- **Machine Learning / Deep Learning**
  - Workshop: **PDEs**: Verification, Mathematics, and Algorithms in the Age of **AI**, September 17-18, **IPAM/UCLA**, 2026.
  - **Coursera Certificate, DeepLearning.AI/Stanford University**: Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization, taught by Andrew Ng, December 18, 2024.
  - **Coursera Certificate, DeepLearning.AI/Stanford University**: Neural Networks and Deep Learning, taught by Andrew Ng, September 14, 2024.

- **Coursera Certificate: Stanford Online & DeepLearning.AI**: Machine Learning, taught by Andrew Ng, August 5, 2024.
- **Coursera Certificate: Stanford Online & DeepLearning.AI**: Unsupervised Learning, Recommenders, Reinforcement Learning, taught by Andrew Ng, August 5, 2024.
- **Coursera Certificate, Stanford Online & DeepLearning.AI**: Advanced Learning Algorithms, taught by Andrew Ng, June 27, 2024.
- **Coursera Certificate, Stanford Online & DeepLearning.AI**: Supervised Machine Learning: Regression and Classification, taught by Andrew Ng, June 4, 2024.
- **DeepLearning.AI, AI Python** for Beginners: Basics of AI Python Coding, taught by Andrew Ng, September 5, 2024.
- **Badge - Constellate from ITHAKA:** Large Language Models (**LLM**) and Embeddings for Retrieval Augmented Generation (**RAG**), August 15, 2024.
- **Badge - Constellate from ITHAKA:** Python Basics, August 15, 2024.
- **AI and Immunology** - Exploring Opportunities and Challenges, National Institute of Allergy and Infectious Diseases (**NIAID**) & **NIH**, May 28–29, 2024.
- **JuliaCon**: JuliaCon is the conference dedicated to the Julia programming language. July 27–29, 2022.
- **Certificate**: Using Matlab with Python, **MathWorks**, MATLAB EXPO, May 18, 2022.
- Online auditing CSCI 4850: Neural Nets, MTSU, Spring 2022.
- Online auditing CSCI 7850: Deep Learning, MTSU, Fall 2021.

◦ **Quantum**

- **MIT OpenCourseWare**, Quantum Mechanics I, by Allan Adams, 2026.
- Quantum Computing: New Frontiers in Biomedical Research Innovation Lab, Office of Data Science Strategy (**ODSS**) and National Cancer Institute (**NCI**), National Institute of Health (**NIH**), Skamania Lodge, Washington. December 2-6, 2024.
- 2024 **SIAM** Quantum Intersections Convening, Tysons, Virginia, October 7-9, 2024.
- **QURECA** - QUREKABox!: Quantum Computing Workshop, MTSU Department of Physics and Astronomy. July 22-24, 2024.
- 2024 Middle Tennessee Quantum Consortium, Broadening Participation in Quantum & AI in Middle Tennessee, March 1, 2024. Virtual.

◦ **Math Biology & Others**

- The Tenth International Conference on Mathematical Modeling & Analysis of Populations in Biological Systems (**ICMA X**), University of Maryland, October 24-25, 2026.
- Topics Leader: AIM Research Community: Ecology Meets Infectious Diseases: Modeling Complex Interactions, 2025-26.

  `https://sites.google.com/view/ecologymeetsinfectiousdisease/home`
- **Coursera Certificate**: Infectious Disease Modeling in Practice, The Johns Hopkins https://sites.google.com/vi Center for Accelerating Modeling Utilization and Synthesis (CAMUS), May 23, 2024.
- MTSU LT&ITC Faculty Writing Retreat, Fall 2024.
- MTSU LT&ITC Weekly Writing Groups, Fall 2022.
- **Dale Carnegie** Immersion Course, MTSU, August 10–12, 2022.
- **NSF** Convergence Accelerator EXPO 2022. July 27–28, 2022.
- Association for Women in Mathematics **(AWIS)** Chapter Leader Summit, summer, 2022, 2024.
- **MATLAB** EXPO 2022, May 17–18, 2022. Virtual.
- **UCI CCBS** Center for Complex Biological Systems: Short Course in Systems Biology - Foundations - Prep Week, May–June, 2022. Virtual.

- **SMB** Math-Epidemiology/Math-Immunology Subgroups Mid-Year Mini Virtual Conference, theme: Epidemiology meets Immunology and Vice Versa - Linking Math Epidemiology to Math Immunology, Feb. 27-28, 2022. Virtual.
- 2022 **Shanks Workshop** on Mathematical Aspects of Fluid Dynamics, Vanderbilt University, February 19-20, 2022.
- **SIMIODE EXPO** Conference, February 10-13, 2022. Virtual.
- **Dynamics Day** 2022, Georgia Tech University. January 7-8, 2022. Virtual.
- Winter Workshop on Competition Dynamics in Biology, Ohio State University, December 15-17, 2021. Virtual.
- 17th annual Shenandoah Undergraduate Mathematics and Statistics (**SUMS**) Conference at James Madison University. December 4, 2021. Virtual.
- Mathematical Sciences Research Institute (**MSRI**) Blackwell Tapia Conference 2021, Nov. 19-20, 2021. Virtual.
- **E-BEER**: International Symposium on Biomathematics and Ecology Education and Research, November 12-14, 2021. Virtual.
- **Banff International Workshop**: Mathematics of the Cell: Integrating Signaling, Transport and Mechanics (21w5154), Oct. 17-22, 2021. Virtual.
- **5th Workshop on Virus Dynamics**, Fred Hutchinson Cancer Research Center, Washington State University. October 4-6, 2021, Virtual.
- **LinkedIn Learning** Certificate: Mathematica 11 Essential Training, September 28, 2021.
- 2021 Mathematics-Tianyuan China-Canada Symposium on Modelling, Prevention and Control of Infectious Diseases, September 15-19, 2021. Virtual.
- **QUBES** (Quantitative Undergraduate Biology Education and Synthesis): Agent/Individual-Based Modeling Faculty Mentoring Network, Fall 2019.
- **E**leventh Undergraduate Research Conferences at the Interface of Biology and Mathematics (**NIMBioS**), Knoxville, TN, November 16-17, 2019.
- Integrated Mathematical Oncology (**IMO**) Workshop 9: Tumor Board Evolution, **Moffitt Cancer Center**, Tampa, FL, November 3-8, 2019.
- The **Fields Institut**e for Research in Mathematical Sciences Workshop on Human-Environment Systems: Feedback and Management, Toronto, Canada, March 5-9, 2018.
- Banff International Research Station for Mathematical Innovation and Discovery (**BIRS**) workshop on Women in Control: New Trends in Infinite Dimensions, Banff, Canada, July 16-21, 2017.
- Teaching 3D Spatial Skills Workshop with Sheryl Sorby, Nashville, TN, December 2-3, 2015.
- **I**nstitute for Mathematics and its Applications (**IMA**) Annual Program Year Workshop: Biological Systems and Networks, November 16-20, Minneapolis MN, 2015.
- Mathematical Association of America (**MAA-PREP**) Workshop: Systemic Initiative for Modeling Investigation and Opportunities with Differential Equations (**SIMIODE**), July 19-25, Helena, MT, 2015.
- Investigative Workshop on Interface Disease Models, National Institute for Mathematical and Biological Synthesis (**NIMBioS**), Knoxville, TN, March 11-13, 2014.
- "Mid-Career Faculty Development" Faculty Learning Community, MTSU 2013-14.
- The Importance of Mentoring and Work-Life Satisfaction Workshop, Association of Women in Science (**AWIS**), MTSU, March 18-20, 2013.
- Learning, Teaching and Innovative Technologies Center (LT&ITC) Writing Group, MTSU, 2012-13.
- Grant Writers' Workshop, Murfreesboro, TN, December 17, 2012.
- Global South Summit, Nashville, TN, November 13-14, 2012.

- **XSEDE** (Extreme Science and Engineering Discovery Environment) Nashville Regional Workshop, Vanderbilt University, Nashville, TN, May 7-8, 2012.
- 5th Hands-on Workshop on Interrogating Cancer Resistance to Targeted Therapeutics with Systems Biology, The Center for Cancer Systems Biology at Vanderbilt University (**CCSB@V**), Nashville, TN, August 22-24, 2011.
- Conference Board of the Mathematical Sciences (**NSF-CBMS**) Lecture Series on Mathematical Epidemiology with Applications, July 25-29, Johnson City, TN, 2011.
- Univ. of Tennessee, Oak Ridge National Laboratory and Kentucky Biomedical Research Infrastructure (**UT-NRNL-KBRIN**) Bioinformatics summit 2010, Cadiz, KY, March 19-21, 2010.
- NUMB3R5 COUNT Workshop, **NIMBioS** (National Institute for Mathematical and Biological Synthesis, **HHMI** (Howard Hughes Medical Institute and **BioQUEST** Curriculum Consortium, May 2009.
- Leading Without Authority Workshop, American Chemical Society (**ACM**), MTSU, February, 2009.
- Mathematical Biosciences Institute (**MBI**) Workshop for Young Researchers in Mathematical Biology, Columbus, OH, March 2007.
- Best Practices in Teaching Program, The Graduate School, University of Tennessee, 2006 - 2007.
- Industrial Mathematical & Statistical Modeling (**IMSM**) workshop, North Carolina State University, July - August 2004.
- Joint Institute for Computational Science (**JICS**) workshop on Parallel Programming with MPI, University of Tennessee, May 2004.
- Mathematical Biological Complexity Short Course, University of Tennessee, July 2003.