

CURRICULUM VITAE

JOSEPH A. IAIA
DEPARTMENT OF MATHEMATICS
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ASSOCIATE PROFESSOR
UNIVERSITY OF NORTH TEXAS

Education:

1991 Doctor of Philosophy in Mathematics at the University of Pennsylvania
1986 Bachelor of Arts in Mathematics at the College of the Holy Cross

Professional Experience:

1997-present Associate Professor, Department of Mathematics, University of North Texas

1991-1997 Assistant Professor, Department of Mathematics, University of North Texas

Summer 1987, Summer 1989-91 Instructor, Department of Mathematics, University of Pennsylvania

RESEARCH

Research Interests:

My research interests lie in partial differential equations and its applications to differential geometry and physics. Understanding solutions of $\Delta u + f(u) = 0$ continues to be a major goal among mathematicians interested in elliptic partial differential equations. In several collaborative efforts, we have studied localized radial solutions of $\Delta u + K(|x|)f(u) = 0$ in all \mathbb{R}^N and on the exterior of the ball of radius $R > 0$.

Publications in Refereed Journals:

43. A p, q Laplacian Problem on Exterior Domains, with Suzan Ahamed, in preparation.

42. Two Infinite Family Solutions to a Linearly Perturbed Singular Superlinear Equation on Exterior Domains, with Narayan Aryal, submitted, 2025.

41. Infinitely Many Solutions for a Singular Semilinear Problem on Exterior Domains, with Suzan Ahamed, submitted, 2025.

40. Existence of Two Infinite Families of Solutions to Singular Superlinear

Equations on Exterior Domains, with Narayan Aryal, *Electronic Journal of the Qualitative Theory of Differential Equations*, 2024, No. 68, pp. 1-14.

39. Existence of Two Infinite Families of Solutions for Singular Superlinear Equations on Exterior Domains, *Electronic Journal of Differential Equations*, Vol. 2024 (2024), No. 06, pp. 1-14.

38. Existence and Nonexistence of Sign-changing Solutions for Singular Superlinear Equations on Exterior Domains, *Communications on Pure and Applied Analysis*, 22(11), 2023, pp. 3218-3232.

37. Existence and Nonexistence of Sign-changing Solutions for Singular Semilinear Equations on Exterior Domains, *Nonlinear Analysis*, Vol. 217, 2022, pp. 1-11.

36. Existence and Nonexistence for Singular Sublinear Problems on Exterior Domains, with M. Ali, *Electronic Journal of Differential Equations*, 2021, No. 3, pp. 1-17.

35. Infinitely Many Solutions for a Singular Semilinear Problem on Exterior Domains, with M. Ali, *Electronic Journal of Differential Equations*, 2021, No. 68, pp. 1-17.

34. Existence of Infinitely Many Solutions for Semilinear Problems on Exterior Domains, *Communications on Pure and Applied Analysis*, Volume 19, Issue 9, 2020, pp. 4269-4284.

33. Existence of Solutions for Semilinear Problems on Exterior Domains, *Electronic Journal of Differential Equations*, 2020, No. 34, pp. 1-10.

32. Existence and Nonexistence of Radial Solutions for Semilinear Equations with Bounded Nonlinearities on Exterior Domains, *Electronic Journal of Differential Equations*, 2020, No. 117, pp. 1-16.

31. Existence of Infinitely Many Solutions for Singular Semilinear Problems on Exterior Domains, *Electronic Journal of Differential Equations*, No. 108, 2019, pp. 1-11.

30. Infinitely Many Solutions for a Semilinear Problem on Exterior Domains with Nonlinear Boundary Condition, with J. Joshi, *Electronic Journal of Differential Equations*, No. 108, 2018, pp. 1-10.

29. Existence of Solutions for Sublinear Equations on Exterior Domains, *Electronic Journal of Differential Equations*, No. 181, 2018, pp. 1-14.

28. Existence of Solutions for Semilinear Problems with Prescribed Number of Zeros on Exterior Domains, *Journal of Mathematical Analysis and Applications*, 446, 2017, pp. 591-604.

27. Existence of Solutions for Sublinear Equations on Exterior Domains, *Electronic Journal of Differential Equations*, 2017, No. 253, pp. 1-14.

26. Existence and Nonexistence for Semilinear Equations on Exterior Domains, *Journal of Partial Differential Equations*, Vol. 30, No. 4, 2017 pp. 1-17.
25. Existence and Nonexistence of Solutions for Sublinear Equations on Exterior Domains, *Electronic Journal of Differential Equations*, 2017, No. 214, pp. 1-13.
24. Existence and Nonexistence for Semilinear Equations on Exterior Domains, *Electronic Journal of Differential Equations*, 227, 2016, pp. 1-9.
23. Existence for Semilinear Equations on Exterior Domains, *Electronic Journal of Qualitative Theory of Differential Equations*, 108, 2016, pp. 1-12.
22. Spreading of Charged Microdroplets, *Differential and Integral Equations*, Vol. 29 No. 9/10, 2016 pp. 923-938.
21. Existence of Solutions for Semilinear Problems with Prescribed Number of Zeros on Exterior Domains, with J. Joshi, *Electronic Journal of Differential Equations*, Number 112, 2016, pp. 1-11.
20. Loitering at the Hilltop on Exterior Domains, *Electronic Journal of Qualitative Theory of Differential Equations*, Vol. 82, 2015, pp. 1-11.
19. The Spreading of Charged Microdroplets, *Electronic Journal of Differential Equations*, 2015, No. 18, pp. 1-20.
18. Solutions of the Porous Medium Equation with Degenerate Interfaces, with S. Betelu, *European Journal of Applied Mathematics*, Volume 24, No. 3, 2013, pp. 315-341.
17. Spreading of Charged Microdroplets, *Electronic Journal of Differential Equations*, 2013, No. 202, pp. 1-22.
16. Traveling Wave Solutions of the Porous Medium Equation with Degenerate Interfaces, with L. Paudel, *Nonlinear Analysis Series A: Theory, Methods, and Applications*, 2013, 81, pp. 110-129.
15. Traveling Waves and Capillarity Driven Spreading of Shear-Thinning Fluids, *Journal of Partial Differential Equations*, Vol. 23, No. 1, 2010, pp. 33-67.
14. Radial Solutions to a Superlinear Dirichlet Problem Using Bessel Functions, with S. Pudipeddi, *Electronic Journal of the Qualitative Theory of Differential Equations*, 2008, no. 38, pp. 1-13.
13. Localized Solutions of Elliptic Equations: Loitering at the Hilltop, *Electronic Journal of the Qualitative Theory of Differential Equations*, 2006, No. 12, pp. 1-15.
12. Nonconvergent Solutions of $\Delta u + f(u) = 0$ in \mathbb{R}^N , *Asymptotic Analysis*, Vol. 37, no. 1, 2004, pp. 1-19.
11. Exact Multiplicity of Positive Solutions in Semipositone Problems with

Concave-Convex Type Nonlinearities, with S. Gadam, *Electronic Journal of the Qualitative Theory of Differential Equations*, No. 4, 2001, pp. 1-9.

10. Uniqueness of Inflection Points for Positive Solutions of a Semilinear Elliptic PDE, *Nonlinear Analysis*, Vol. 47, 2001, pp. 3231-3233.

9. Encapsulated-Vortex Solutions to Equivariant Wave Equations: Existence, with Henry Warchall. *SIAM Journal of Mathematical Analysis*, Vol. 30, No. 1, 1998, pp. 118-139.

8. Localized Radial Solutions to a Semilinear Elliptic Equation on \mathbb{R}^N , *Dynamical Systems and Differential Equations - Proceedings of the International Conference on Dynamical Systems and Differential Equations, Springfield, Missouri 1996*, Vol. I, 1998, pp. 314-326.

7. Localized Solutions of Sublinear, Elliptic Equations: Loitering at the Hilltop, with Henry Warchall and Fred Weissler, *Rocky Mountain Journal of Mathematics*, Vol. 27, No. 4, 1997, pp. 1131-1157.

6. A Priori Estimates and Uniqueness of Inflection Points for Positive Solutions of Semipositone Problems, *Differential and Integral Equations*, Vol. 8, No. 2, 1995, pp. 393-403.

5. A Priori Estimates for a Semilinear Elliptic PDE, *Nonlinear Analysis: Theory, Methods, and Applications*, Vol. 24, No. 7, 1995, pp. 1039-1048.

4. Nonradial Solutions of a Semilinear Elliptic Equation in Two Dimensions, with Henry Warchall, *Journal of Differential Equations*, Vol. 119, No. 2, 1995, pp. 533-558.

3. Radial Solutions to a p-Laplacian Dirichlet Problem, *Applicable Analysis*, Vol. 58, 1995, pp. 335-350.

2. The Weyl Problem for Surfaces of Nonnegative Curvature, *Lecture Notes in Pure and Applied Mathematics*, Vol. 144: *Geometric Analysis and Nonlinear Partial Differential Equations*, 1993, pp. 213-220.

1. Isometric Embeddings of Surfaces with Nonnegative Curvature in \mathbb{R}^3 , *Duke Mathematical Journal*, Vol. 67, No. 2, 1992, pp. 423-459.

Presentations:

42. *Two Infinite Families of Solutions of a Singular Semilinear Equation on Exterior Domains*, Texas Section Meeting of the MAA, Tarleton State University, Stephenville, Texas, March 24, 2023.

41. *What are N-functions and Why are They Interesting?*, Texas Section Meeting of the MAA (virtual), Colin College, April 9, 2021.

40. *The Integration Bee, Problem of the Month, and Math Club at the University of North Texas*, Texas Section Meeting of the MAA, El Centro College, Dallas, Texas, April 6, 2018.
39. *Infinitely Many Solutions of a Semilinear Equation on Exterior Domains*, Sectional Meeting of the AMS, University of North Texas, Denton, Texas, Sept. 8, 2017.
38. *U.S. Presidents and Mathematics*, Texas Section Meeting of the MAA, Texas A&M University - Commerce, Texas, March 31, 2017.
37. *Infinitely Many Solutions to a Semilinear Equation on Exterior Domains*, Texas Section Meeting of the MAA, Stephen F. Austin University, Nacogdoches, Texas, April 1, 2016.
36. *Loitering at the Hilltop on Exterior Domains*, Ninth International Conference on Differential Equations and Dynamical Systems in Dallas, Texas, May 14, 2015.
35. *Spreading of Charged Microdroplets*, Texas Partial Differential Equations Conference, University of North Texas, Denton, TX, March 2, 2014.
34. *Spreading of Charged Microdroplets*, Texas Section Meeting of the MAA, Texas Tech, Lubbock, TX April 12, 2014.
33. *Traveling Wave Solutions of the Porous Medium Equation*, MAA Mathfest, Hartford, CT August 3, 2013.
32. *Spreading of Charged Microdroplets*, International Conference on Theory, Methods, and Applications of Nonlinear Equations, Texas A&M Kingsville, December 18, 2012.
31. *Some of my best friends are Differential Equations*, University of North Texas Seminar, September, 2012.
30. *Traveling Waves and Capillarity Driven Spreading of Shear-Thinning Fluids*, Texas Partial Differential Equations Conference, Texas A&M, March 2-3, 2012.
29. *Traveling Wave Solutions of the Porous Medium Equation*, Oklahoma Partial Differential Equations Workshop, Oklahoma State University, November, 2011.
28. *Traveling Waves and Capillarity Driven Spreading of Shear-Thinning Fluids*, 2009 Texas Partial Differential Equations Conference, Southwest Texas State University, San Marcos, TX, April 10, 2009.
27. *Traveling Waves and Capillarity Driven Spreading of Shear-Thinning Fluids*, Texas Section Meeting of the MAA, University of North Texas, Denton, TX, April 17, 2009.

26. *Nonconvergent Solutions of $\Delta u + f(u) = 0$ in \mathbb{R}^N* . Variational Problems Conference at the University of Northern Arizona, Flagstaff, AZ, June 4-5, 2002.
25. *Solutions of a Semilinear Elliptic Equation*, Texas A&M University at Commerce, Commerce, TX, November 29, 2000 (invited).
24. *Solutions of a Semilinear Elliptic Equation*, World Congress of Nonlinear Analysis, Catania, Sicily, July 26, 2000 (invited).
23. *Radial and Nonradial Solutions for Semilinear Elliptic Equations*, Texas Christian University, Fort Worth, TX, October 26, 1999 (invited).
22. *Radial and Nonradial Solutions for Semilinear Elliptic Equations*, AMS Eastern Section Meeting, Philadelphia, PA, April 5, 1998 (invited).
21. *Positive Solution Curves in Semipositone Problems with Concave-Convex Type Nonlinearities*, National Meeting of the AMS, Baltimore, MD, January 10, 1998.
20. *Positive Solution Curves in Semipositone Problems with Concave-Convex Type Nonlinearities*, Texas Partial Differential Equations Conference, University of North Texas, April 20, 1997.
19. *Localized Radial Solutions of a Semilinear Elliptic Equation on \mathbb{R}^N* , National Meeting of the AMS, San Diego, CA, January 9, 1997.
18. *Soap Bubbles*, University of North Texas, September 13, 1996.
17. *Radial and Nonradial Solutions of $\Delta u + f(u) = 0$ in \mathbb{R}^N , part II*, Summer School in Differential Equations and Related Areas, National University of Columbia and University of the Andes, Bogota, Columbia, July 28, 1996 (invited).
16. *Radial and Nonradial Solutions of $\Delta u + f(u) = 0$ in \mathbb{R}^N , part I*, Summer School in Differential Equations and Related Areas, National University of Columbia and University of the Andes, Bogota, Columbia, July 26, 1996 (invited).
15. *Radial Solutions of $\Delta u + f(u) = 0$ in \mathbb{R}^N* , International Conference on Dynamical Systems and Differential Equations, Southwest Missouri State University, Springfield, MO, June 1, 1996 (invited).
14. *Encapsulated-Vortex Solutions to Nonlinear Wave Equations: Existence*, Texas Partial Differential Equations Conference, Southwest Texas State University, San Marcos, TX, March 30, 1996.
13. *Localized Radial Solutions of a Semilinear Elliptic Equation on \mathbb{R}^N* , National Meeting of the AMS, Orlando, FL, January 11, 1996.
12. *Radial and Nonradial Solutions for Semilinear Elliptic Equation*, the Clavius Group, Notre Dame University, South Bend, IN, July 26, 1995 (invited).

11. *Radial Solutions for a Semilinear Elliptic Equation*, National Meeting of the AMS, San Francisco, CA, January 4, 1995.
10. *Solutions of $\Delta u + f(u) = 0$ in \mathbf{R}^N with $u(x) \rightarrow 0$ as $|x| \rightarrow \infty$* University of North Texas, October 27, 1995.
9. *Radial Solutions to $\Delta u + f(u) = 0$ in \mathbb{R}^N* , Twenty-Third Midwest Differential Equations Conference, University of Oklahoma, Norman, OK, October 8, 1994.
8. *Radial Solutions to a p -Laplacian Dirichlet Problem*, Texas Partial Differential Equations Conference, University of Texas, Austin, TX, April 24, 1994.
7. *What the heck do Differential Equations have to do with Kepler's Laws of Planetary Motion* Mathematics Club, University of North Texas, April 20, 1994.
6. *Nonradial Solutions of a Semilinear Elliptic Equation in \mathbb{R}^2* , Central Section Meeting of the AMS, Texas A&M, College Station, TX, October 23, 1993.
5. *A Priori Estimates and Uniqueness of Inflection Points for Positive Solutions of Semipositone Problems*, National Meeting of the AMS, San Antonio, TX, January 14, 1993.
4. *Soap Bubbles and Minimal Surfaces*, Mathematics Club, University of North Texas, November 11, 1992.
3. *Isometric Embeddings of Surfaces with Nonnegative Curvature in \mathbb{R}^3* , Texas Partial Differential Equations Conference, University of North Texas, Denton, TX, March 7, 1992.
2. *Curvature Functions for Compact Surfaces*, University of North Texas, November 5, 1991.
1. *The Weyl Embedding Problem for Surfaces of Nonnegative Curvature*, Central Section Meeting of the AMS, University of North Texas, Denton, TX, November 2, 1990.

Research Grants:

Simons Foundation Travel Support for Mathematicians - MP-TSM - 00002319 - \$42,000, GAWD000300, Nonlinear Elliptic Equations on Exterior Domains, 2023-2028.

Center for Undergraduate Research in Mathematics (CURM) - OXY-CURM0088 - minigrant for undergraduate research in mathematics with T. Shelton from Southwestern University in Georgetown, Texas, 2022, \$5250. I worked with undergraduates **Hunter Baird** and **Luis Vazquez**. They presented their results at the **2023 Texas MAA Conference at Tarleton State University on March 24, 2023**. They were awarded the best talk in Room

209 at the conference. We also attended the **Texas Undergraduate Mathematics Conference (TUMC)** at the University of Texas in October, 2022. These students also spoke in the **UNT STaRS Seminar** on April 7, 2023.

UNT ROP Faculty Research Grants:

- Summer 2004, \$2500.
- Summer 2003, \$1800.
- Summer, 2002, \$1800.
- Summer 1997, \$1800.
- Summer 1996, \$2500.

UNT RIG Faculty Research Grants:

- Summer 1995, \$2500.
- Summer 1994, \$2500.
- Summer 1993, \$2500.
- Summer 1992 , \$2100.

Applied for an RTG grant from NSF with Lior Fishman, Stephen Jackson, Nam Trang in 2024, denied.

Applied for an RTG grant from NSF with Lior Fishman, Stephen Jackson, Nam Trang in 2023, denied.

Applied for an RTG grant from NSF with Lior Fishman, Stephen Jackson, Nam Trang, Jonathan Cohen in 2022, denied.

Applied for a Center for Undergraduate Research in Mathematics (CURM) min-igrant for undergraduate research in mathematics with T. Shelton from Southwestern University in Georgetown, Texas, 2020, denied.

Applied for a Simons Collaboration Grant, 2021 denied.

Applied for a Simons Collaboration Grant, 2019 denied.

Applied for a NSF grant with S. Betelu, 2010, denied.

Applied for a UNT ROP Faculty Research Grant for Summer 2005, denied.

Applied for an NSF grant for 2003, denied.

Applied for a TARP grant with H. Warchall, 1993, 1995, 1997, denied.

Applied for a Junior Faculty Grant from UNT, 1991, 1992, 1993, denied.

Applied for an NSF grant with Henry Warchall and Alfonso Castro, 1993, denied.

TEACHING and ADVISING

Ph.D. students who have graduated under my direction:

Mageed Ali, 2021 - He is currently a professor of mathematics at the University of Kirkuk, Iraq.

Janak Joshi, 2018 - He was an assistant professor of mathematics at Cameron University in Oklahoma and is now a full time permanent faculty member at Dallas College.

Laxmi Paudel, 2013 - He is now a full time assistant professor of mathematics at Albany State University (an HBCU) in Albany, Georgia.

Sridevi Pudipeddi, 2008 - She has held positions at Augsburg University and University of Minnesota. She authored a book about using Python. She is a current associate teaching professor at Kansas State University and an instructor at UC Berkeley Extension where she teaches machine learning and data science.

Current PhD students: Suzan Ahamed, Narayan Aryal

Current Master's student: Yutaro Yokoyama

Current undergraduates whom I worked with over the summer of 2024: Archith Sharma, Jackson Zemanski

Current undergraduates whom I am working with: Ali Diwan.

A. Diwan, J. Iaia *Two Infinite Families of Solutions for Singular Superlinear Equations on Exterior Domains*, arXiv:2407.14408, 2024.

Masters' students who have graduated under my direction:

Yutaro Yokoyama, 2025

Rasha Alsaeed, 2023

Siyu Gao, 2021

James Gates, 2021

Adam Kiehl, 2015

Derrick Ankomah-Nyarko, 2013

Bob Hingtgen, 2012

Buck Langston, 2009

Tim Wilson, 2009

Warrawecha Boonsa, 2006

Scott Brisendine, 2001

Kwan Lam, 1999

Jose Maldonado, 1999
Johanna Debrecht, 1998
David Heinlein, 1998
Shelley Stewart, 1998
Ola Disu, 1996
Jeremy Thompson, 1995
Edward MacPherson, 1994

Served on Ph.D. defense committee for:

Ifeanyichukwu Valentine Ukenazor, 2024
Ugochukwu Oliver Adiele, 2023
Alex Creiner, 2022
Emmanuel Tamalkloe, 2021
Jie Zhou, 2021
Manijeh Bahreini, 2003
Enam Hoq, 2003
Mike Reese, 2001
Marcel Finan, 1998
Seyoung Kim, 1996
Mehran Hassanpour, 1995
Mohammed Zahran, 1995
Jaime Navarro, 1993
Jorge Cassio, 1992

Served on master's defense committee for:

Johanson Berlie, 2024
John Deines, 2023
Philip Azad, 2023
Vidya Chandrasekaran, 2023
Erin Raign, 2023
Callum Doyle, 2023
Sohil Majmudar, 2008
Nicolas Lobotsky, 2007
Lisa Baker, 2003
Pallavi Ketkar, 1998
Bill McKenna, 1998
Rebecca Parsons, 1998
Rebecca Risley, 1998
Loris Zucca, 1998
Cliff Parrish, 1996
Monty Moore, 1995
John Hunt, 1993

Have taught **Math 3010 Problem Solving Seminar** with P. Allaart, 2014-2021, T. Jones 2022, 2023. This is a one hour class which meets in the fall and in it we try to help prepare undergraduates for the William Lowell Putnam Exam.

Helped proctor the **William Lowell Putnam Exam**, 2014-2019, 2021-2023.

Attended the **Mobile Summer Institute (MOSI)** May 14-18, 2018 at UNT. In this workshop we discussed various ways to teach science classes in a more interactive way. We were encouraged to use various techniques in the classroom such as: having students work together in small groups, using clickers to obtain more real-time feedback from students, etc.

Served as Ph.D. advisor for Ifeanyichukwu (Valentine) Ukenazor for one semester in 2018.

Reading Courses with Graduate Students:

Yutaro Yokoyama, Fall 2024.

Narayan Aryal, Differential Equations, 2023-2024.

Suzan Ahamed, Differential Equations, Fall 2022, 2023-2024.

Matthew Phillips, Differential Geometry, Fall 2023.

Siyu Gao, Differential Equations, Fall 2021.

James Gates, Measure Theory, Spring 2021, Fall 2020, Spring 2020.

James Solow, Functional Analysis, 2009.

Alysmarie Hodges, Differential Equations, 2009.

Wiam Jasim, Dynamical Systems, 2008.

Reading Courses with Undergraduate Students:

Ali Diwan, 2025, 2023.

Jun Chu, Fall 2020.

Hozhi Kagalwala and Ryan Burns, Differential Equations and Fourier Series, 2005.

Heather Appleby, Differential Equations and Fourier Series, 1999.

Jennifer Baccus, Differential Equations and Fourier Series, 1995.

Supervised **McNair Scholar Jenifer Cenicerros** in her project about Torricelli's Law and Predator-Prey problems, 2016.

Gave several mock lectures to middle schoolers from Denton, Fall 2019.

Teaching Awards:

Received the **Faculty Teaching Award** from the University of North Texas Mathematics Department for 2023.

Received the **Ron Barnes Distinguished Service to Students Award** from the Texas Section of the MAA, 2020.

Thank-a-Teacher Award from a UNT student, 2017.

Teacher of Merit Award for the Texas Academy of Math and Science from the Regeneron Science Talent Search, 2017.

Received a **Certificate of Recognition** for the Advancement of Hispanic Education from LULAC Youth Council 330 in Denton, 1997.

Received a **Top Prof Award** from the Mortar Board Senior Honor Society, November 1994.

SERVICE

Professional Activities:

Received the **2024 Distinguished Service Award from the Texas Section of the MAA.**

Level III Director of the Texas MAA, 2015-2018, 2024-2027.

Arrangements Chair of the Texas MAA, 2018-2020.

Organized the **101st Annual Texas Section of the MAA Conference which was held at UNT March 31-April 2, 2022.** About 150 people attended the conference. (I also organized the 2020 Meeting which was to be at UNT but was it canceled due to COVID-19 about 2 weeks before the conference).

Organized the **37th Annual Texas Partial Differential Equations Conference** held at the University of North Texas, March 1-2, 2014.

Organized the **John Neuberger 70th Birthday Conference** held at the University of North Texas, October 30-31, 2004.

Organized the **26th Annual Texas Partial Differential Equations Conference**, March 29-30, 2003 held at the University of North Texas.

Organized the **20th Annual Texas Partial Differential Equations Conference**, April 19-20, 1997 held at the University of North Texas.

Cochaired the Special Session, *Nonlinear Partial Differential Equations*, at the Central Section Meeting of the AMS, Texas A&M, October 22-23, 1993.

Refereeing Activity:

Mathematics, partial review 2024.

Electronic Journal of Differential Equations, 2023, two articles 2021, 2016, 2009, 2005, 2004, 2001, two articles 1999, 1998, two articles 1996, 1994.

Advances in Nonlinear Analysis, 2022.

Applied Mathematics Letters, 2020.

Communications in Pure and Applied Analysis, 2019.

Discrete and Continuous Dynamical Systems, Science China Mathematics, 2018.

Bulletin of the London Mathematical Society, 2018, 2016.

Waves in Random and Complex Media, 2017.

Journal of Computational and Applied Mathematics, 2011.

Differential and Integral Equations, 2009.

Physica D: Nonlinear Phenomena, 2008.

American Mathematical Monthly, 2003, 1993, 1992.

Nonlinear Analysis: Theory, Methods, and Applications, 1995, 1994.

Math Reviews for:

Applicable Analysis, 1996,

Asymptotic Analysis, 1994,

Communications in PDE, 1994,

Journal of Mathematical Analysis and Applications, 1994,

SIAM Journal of Mathematical Analysis, 1994.

Department of Mathematics:

Member of the Executive Committee, 2023-2025, 2020-2022, 2016-2018, 2000-2002, 1997-1999.

Distinguished Teaching Award received from the Department of Mathematics 2023.

Distinguished Service Award received from the Department of Mathematics 2024, 2019, 2016.

Integration Bee - Organized and have run the Integration Bee 2022-2025, 2012-2019. There were no competitions in 2020-2021 due to COVID.

Problem of the Month Competition - Have posted the problem of the month and its solution on the Math Club bulletin board and on the Math Department's website from Aug. 2014-2025

Undergraduate Mathematics Colloquium organizer, 2015-2019, 2022-2023. Have invited a number of well-known mathematicians to give a talk to the undergraduates. Speakers have included **William Dunham** - mathematical biographer, **Glenn Whitney** - founder of the Museum of Math in New York City, **James Tanton** - scholar at the MAA, **Ken Golden** - scholar of sea ice in Antarctica and known as the Indiana Jones of Mathematics, **Michael Dorff** - recent MAA President.

Faculty Advisor to the UNT Math Club, 2012-2025

- Weekly meetings for about an hour and we discuss interesting mathematics, mathematics problems that we have come across during the week including Putnam exam problems.
- Have organized twice yearly Math Club picnics 2015-2019, 2021-2025.
- Led a Calculus Bowl team at the Texas Section Meeting of the MAA, 2015-2019, 2022-2023.
- Led a group of undergraduates to the **Texas Undergraduate Math Conference (TUMC)** at University of Texas at Tyler, 2024.

Designed the syllabus for Math 5720 - Advanced Problem Solving and Preparation for the AMC, AIME, USJAMO, USAMO, and Putnam Exams. This course will be a part of the new Masters' in Math Ed program being developed by the Math Department.

Chair of the Applied Math and Partial Differential Equations Search, 2022-2023.

Chair of the Applied Math with Partial Differential Equations Search, 2019.

Chair of the Real Analysis Qualifying Exam Committee, 2022, 2021, 2019, 2018, 2013, 2005, 2003, 2001.

Chair of the Strategic Planning Committee 2013-2014.

Chair of the Undergraduate Affairs Committee 2009-2013, 2005-2006, 1999-2001.

Chair of the Faculty Search Committee, 2005.

Member of the Applied Math and Partial Differential Equations Search, 2022.

Member of the Real Analysis Qualifying Exam Committee, 2024, 2023, 2020, 2016-2018, 2013-2014, 2001-2009.

Member of the Complex Analysis Qualifying Exam Committee, 2007-2009.

Member of the Undergraduate Affairs Committee 2004-2013, 1994-1996.

Member of a three person committee to address a student grade appeal, 2019.

Member of several student grade appeals committees.

Course Coordinator Business Calculus: Spring 2010, Fall 2009, Fall 2007, Spring 2007, Fall 2006

Course Coordinator College Algebra: Spring 2009, Fall 2008, Spring 2005, Fall 2004, Spring 2003, Fall 2003, Fall 2002, Fall 1993, Fall 1992

Course Coordinator for TAMS Classes, Spring 1999, Fall 1998, Spring 1998.

Course Coordinator for Calculus 1, Fall 1997.

Calculus Textbook Committee, Spring 1996.

College Algebra Textbook Committee, Spring 1993.

Presented a talk to the Mathematics Club, October 2006.

Undergraduate Mathematics Advisor, Fall 1999 - Summer 2001.

Served as a Faculty Advisor to the undergraduate Mathematics Club, 1992

Involvement with the Texas Academy of Math and Science (TAMS):

Member of the TAMS selection committee in 2017-2022.

Gave mock lectures to prospective TAMS students on September 14, 2019, November 4, 2017.

Met weekly with TAMS student **Atharv Chagi** in the Fall of 2022 to discuss mathematics research and differential equations.

Met weekly with TAMS student **Kelly Camacho** in the Fall of 2022 to discuss mathematics research and differential equations.

Met weekly with TAMS students **Ranak Bansal, Jun Chu, Abhinav Emani, Vishnu Kamireddy, Pranav Logan** in 2019-2020 to discuss mathematics research.

Met weekly with TAMS student **Nikita Traynin** in Fall 2016 and Spring 2017 to discuss Differential Equations.

Met weekly with TAMS student **Daniel Kim** in Fall 2016 to discuss Differential Equations.

Supervisor for a **Special Problems class in Differential Geometry** in Spring 1998, Spring 1999, Spring 2000.

Taught **Math 3010** in Fall 1996, Spring 1997, Fall 1997, Spring 1998, Fall 1998 - a problem solving class aimed at preparing TAMS students for competitive mathematics exams.

Proctored various competitive exams in which the TAMS students participated including the **Putnam**, **AHSME (American High School Math Exam)**, **AIME (American Invitational Math Exam)**, **NML (National Math League)**, **TXML (Texas Math League)**, and **Mandelbrot**. Also transported TAMS students to mathematics competitions including the **Oklahoma State University Mathematics Competition in Fort Worth (October 1998)**, the **Greenhill High School Mathematics Competition (October 1997)** and the **Rice University High School Mathematics Competition (February 1996, 1997)**.

Served on a three person jury in which a student appealed his expulsion from TAMS, March 1999.

Served on a three person jury in which several students appealed their expulsion from TAMS, April 1998.

Served from 1994-2000 as an interviewer for prospective TAMS students.

Served on numerous Question and Answer Panels with questions asked by parents of prospective TAMS students, 1997-1999.

Served as Faculty Advisor to the TAMS chapter of $\mu\alpha\theta$ (a national mathematics club) 1996-1999.

Directed 1994 summer research work for TAMS students Isaac Negusse and Christa Hays.

Have written several hundred letters of recommendation for students' (mostly TAMS) applications for colleges, scholarships, etc.