

# CURRICULUM VITAE

(TCU Format)

*Last updated January 23, 2024*

1. Name: Greg Friedman

2. Place of birth and date: New Brunswick, NJ - November 25, 1973

3. Educational background after high school:

Courant Institute of Mathematical Sciences, New York University, New York, NY  
Ph.D. - Mathematics, 5/01 - MS - Mathematics, 9/98

Brown University, Providence, RI  
Sc.B. Magna Cum Laude - Mathematics and Math-Physics (each with honors), 5/96

4. Formal continuing education associated with professional development: N/A

5. Professional certifications: N/A

6. Present Rank: Professor, member of the Graduate Faculty, John William and Helen Stubbs Potter Professor of Mathematics (as of 2022)

7. Year of appointment to the University and rank: 2005, Assistant Professor

8. Year of last promotion: 2016

9. Previous teaching and/or research appointments:

Departments of Mathematics, Université Lille and Université Artois, France  
Visitor: 5/19/13-5/25/13 (Lille), 5/25/13-5/31/13 (Artois-Lens)

Department of Mathematics, Vanderbilt University, Nashville, TN  
NSF-RTG Assistant Professor (non-tenure-track): 7/05 -7/06

Einstein Institute of Mathematics, Hebrew University, Jerusalem, Israel  
Visitor: 6/05

Department of Mathematics, Yale University, New Haven, CT  
Gibbs Assistant Professor (non-tenure-track): 6/04-7/05  
NSF VIGRE/Gibbs Instructor (non-tenure-track): 5/01-6/04

Courant Institute of Mathematical Sciences, New York University, New York, NY  
Graduate Assistant: 9/96-7/01

Morse Academic Plan of the College of Arts and Sciences, New York University, New York, NY  
Preceptor: 9/00-12/00

Stevens Institute of Technology, Hoboken, NJ  
Instructor - Stevens Technical Enrichment Program: 6/99-7/99

NSF-Research Experience for Undergraduates at Indiana University, Bloomington, IN  
Researcher: Summer, 1995

10. Previous professional positions not listed in 9: N/A

11. Courses Taught:

at TCU:

MATH 10043 – Elementary Statistics (four times)  
MATH 10054 – Precalculus with Trigonometry  
MATH 10283 – Applied Calculus (twice)  
MATH 10524 – Calculus I (seven times)  
MATH 20123 – Discrete Mathematics I (three times)  
MATH 20524 – Calculus II (six times)  
MATH 30123 – Discrete Mathematics II (three times)  
MATH 30524 – Calculus III (seven times)  
MATH 30613 – Differential Equations (eleven times)  
MATH 30853 – Statistics (three times)  
MATH 40970/60970 – Topology of Spaces and Knots  
MATH 50253 – Abstract Algebra I (three times)  
MATH 50403 – Complex Analysis  
MATH 60023 – Survey of Mathematical Problems I (MAT)  
MATH 40970/60263 – Abstract Algebra II (three times)  
MATH 60323 – Algebraic Topology I (twice)  
MATH 60970 – Topics in Algebraic Topology  
MATH 70333 – Algebraic Topology II  
MATH 80970 – Advanced Topics in Algebraic Topology (twice)

TCU Independent Studies: Topology

at Vanderbilt University: Linear Algebra, Introduction to Abstract Algebra

at Yale University: Calculus of Functions of One Variable II; Calculus of Functions of Several Variables; Vector Calculus and Linear Algebra (two semester course, three times each); Introduction to Complex Analysis; Intersection Homology and Related Topics (graduate course)

at New York University: Calculus I (twice), Mathematical Thinking, Business Calculus, Discrete Mathematics  
*Teaching Assistant*: Calculus II (twice), Pre-calculus (twice), Business Calculus, Advanced Calculus (graduate)

at Stevens Institute: Calculus

## 12. External Support Sought:

a. received:

- Simons Foundation: Mathematics Collaboration Grant, Intersection Invariants of Manifolds and Stratified Spaces, \$42,000, 2021-2026
- Proposal (with Markus Banagl, Robert Young, and Shmuel Weinberger) accepted by Simons Foundation to fund and host Singularities: Geometric, Topological, and Analytic Aspects - a conference in honor of Sylvain Cappell on his 70th birthday, to be held at the Simons Foundation, New York, NY, in August 13-17, 2018
- NSF Grant DMS-1764311 (with Craig Guilbault, Molly Moran, Nathan Sunukjian, Eric Swenson) for Workshops in Geometric Topology, \$50,000, 2018-2021 (extended to 2024)
- NSF Grant DMS-1741730 (with Jose Carrion, Eric Hanson, Scott Nollet, Efton Park) for NSF/CBMS Regional Conference in the Mathematical Sciences on Applications of Polynomial Systems, June 4-8, 2018, Fort Worth, TX, \$35,000
- NSF Grant DMS-1461385 (with Craig Guilbault, Eric Swenson, Fred Tinsely, and Gerard Venema): Workshops in Geometric Topology, \$50,166, 2015-2018
- NSF Grant DMS-1308306: Homological Invariants of Manifolds and Stratified Spaces, \$165,000, 2013-2016, extended to 2017
- Simons Foundation: Mathematics Collaboration Grant, Topology of Stratified Spaces, \$35,000, 2011-2016
- NSF Grant DMS-1137952 (with Bob Doran and Scott Nollet) for NSF/CBMS Regional Conference in the Mathematical Sciences on Hodge Theory, Complex Geometry, and Representation Theory, June 18-22, 2012, Fort Worth, TX, \$34,997
- NSF: DMS 0735233 (with Bob Doran) NSF/CBMS Regional Conference in the Mathematical Sciences: Topology,  $C^*$ - algebras, and String Duality, June 2-6, 2008, \$33,088.00 (with R. Doran) ; conference was postponed and took place on May 18-22, 2009

- Mathematical Sciences Research Institute: Funding (\$15,000) to host Workshop on the Topology of Stratified Spaces at MSRI, Berkeley, CA, September 8-12, 2008

b. not received:

- NSF: Intersection homology, geometric cochains, and topological linear algebra. 11/02/21, \$330,239
- NSF: Homological invariants of spaces and operators. 11/03/20, \$204,144.
- Simons Foundation Collaboration Grant for Mathematicians, Intersection invariants of manifolds and stratified spaces, 1/31/20, \$42,000
- NSF: DMS 2003682, Homological invariants of spaces and operators. 11/05/19, \$328,503.
- Simons Foundation Collaboration Grant for Mathematicians, Homological Invariants of Spaces and Operators. 1/31/19, \$42,000
- NSF: DMS 1905299, Homological invariants of spaces and operators. 11/06/18, \$274,494.
- Simons Foundation Collaboration Grant for Mathematicians, Homological invariants for stratified spaces, manifolds, and algebras. 1/21/18, \$42,000
- NSF: DMS 1810775, Homological invariants for stratified spaces, manifolds, and operator algebras. 11/07/17, \$284,008.
- NSF: DMS 1704950 Homological invariants for stratified spaces, manifolds, and operator algebras. 11/01/16, \$266,222.
- NSF: DMS 1606729 Intersection homology, linking structures on manifolds, and topological linear algebra. 11/03/15, \$261,434.00.
- NSF: DMS 1207864 Topology of stratified spaces. 11/02/11, \$221,747.00.
- NSF: DMS 1105038 Topology of stratified spaces. 10/29/10, \$219,387.00
- NSF: DMS 1005759 Topology and analysis of stratified spaces 10/29/09 \$126,407.00
- NSF: DMS 0905265 Intersection Homology and Stratified Spaces, 10/31/2008, \$113,258.00
- NSF: DMS 0813600 Workshop on Topology of Stratified Spaces at MSRI, September 8-12, 2008 (supplemental funding), 12/14/2007 \$32,000.00
- NSF: DMS 0804225 Intersection Rational Homotopy, 10/31/2007, \$100,442.00
- NSF: DMS 0706027 Algebraic invariants of stratified spaces, 11/03/2006, \$95,621.00
- NSF: DMS 0630244 NSF/CBMS Regional Conference in the Mathematical Sciences: Topology,  $C^*$ - algebras, and String Duality, April 7, 2007, 03/30/2006, \$33,088.00
- NSF: DMS 0603705 Intersection homology through singular chains, 10/20/2005, \$98,653.00
- NSF: DMS 0504335 Algebraic and geometric topology of stratified spaces, at Yale University, 10/29/2004, \$136,409.00
- NSF: DMS 0404555 Stratified spaces and singular knots, at Yale University, 10/24/2003, \$126,326.00

c. pending

- NSF Grant DMS-2350373 (with Craig Guilbault, Molly Moran, Nathan Sunukjian, Jack Calcut) for Workshops in Geometric Topology, \$76,050, 2024-2027

13. Internal grants:

a. received:

- TCU Research and Creative Activities Fund (RCAF) grant, Manifold Algebras via Intersections, \$4500, 2020-2021

b. not received:

- TCU Junior Faculty Summer Research Program, 2009

c. pending:

14. Graduate theses and dissertations directed:

- Kyle Matthews, Ph.D. 2016, *Universal Poincaré Duality for Branched and Partial Coverings of Pseudomanifolds*

15. Presentation of scholarly and creative activities

a. Refereed publications:

- Greg Friedman, *Topological invariance of torsion-sensitive intersection homology*, **Geometriae Dedicata** 217 (2023), Paper No. 105, 43 pp.
- Greg Friedman, *Two short proofs of the topological invariance of intersection homology*, **Journal of Singularities** 25 (2022), 144-149
- Greg Friedman and James E. McClure, *Intersection homology duality and pairings: singular, PL, and sheaf-theoretic*, **Algebraic and Geometric Topology** 21-7 (2021), 3221-3301
- Greg Friedman, *Generalizations of intersection homology and perverse sheaves with duality over the integers*, **Michigan Mathematical Journal** 68 (2019), 675-726
- Greg Friedman, *The chain-level intersection pairing for PL pseudomanifolds revisited*, **Journal of Singularities** 17 (2018), 330-367
- Greg Friedman and Efton Park, *Unitary equivalence of normal matrices over topological spaces*, **Journal of Topology and Analysis** 8 (2016), 313-348
- Greg Friedman, *Stratified and unstratified bordism of pseudomanifolds*, **Topology and Its Applications** 194 (2015), 51-92
- Robert S. Doran, Greg Friedman, and Scott Nollet (editors), **Hodge Theory, Complex Geometry, and Representation Theory**, Contemporary Mathematics Vol. 608, American Mathematical Society, 2014
- Greg Friedman and James McClure, *The symmetric signature of a Witt space* – **Journal of Topology and Analysis** 5 (2013), 121-159
- Greg Friedman and James McClure, *Cup and cap product in intersection (co)homology* – **Advances in Mathematics** 240 (2013), 383-426
- Greg Friedman, *Witt bordism in characteristic 2* - **Archiv der Mathematik** 100 (2013), 381-387
- Greg Friedman and Eugénie Hunsicker, *Additivity and non-additivity for perverse signatures* – **Journal für die reine und angewandte Mathematik (Crelle's Journal)** 676 (2013), 51-95
- Greg Friedman, *An elementary illustrated introduction to simplicial sets* – **Rocky Mountain Journal of Mathematics** 42 (2012), 353-424
- Greg Friedman, *Corrigendum to "Intersection homology with field coefficients: K-Witt spaces and K-Witt bordism"* - **Communications on Pure and Applied Mathematics** 65 (2012), 1639–1640
- Greg Friedman, Eugénie Hunsicker, Anatoly Libgober, Laurentiu Maxim (editors), **Topology of Stratified Spaces**, Mathematical Sciences Research Institute Publications 58, Cambridge University Press 2011
- Greg Friedman, *An introduction to intersection homology with general perversity functions*, in **Topology of Stratified Spaces**, Greg Friedman, Eugénie Hunsicker, Anatoly Libgober, Laurentiu Maxim (editors), Mathematical Sciences Research Institute Publications 58, Cambridge University Press 2011, 177-222
- Robert Doran, Greg Friedman, and Jonathan Rosenberg (editors), **Superstrings, Geometry, Topology, and C\* Algebras**, Proceedings of Symposia in Pure Mathematics 81, Providence: American Mathematical Society, 2010
- Greg Friedman, *Intersection homology with general perversities*, **Geom. Dedicata** 148 (2010), 103-135
- Greg Friedman, *Intersection homology with field coefficients: K-Witt spaces and K-Witt bordism* - **Comm. Pure Appl. Math.** 62 (2009), 1265-1292
- Greg Friedman, *On the chain-level intersection pairing for PL pseudomanifolds* – **Homology, Homotopy Appl.** 11 (2009), 261-314
- Greg Friedman, *Intersection homology and Poincare duality on homotopically stratified spaces* – **Geom. Topol.** 13 (2009), 2163-2204
- Greg Friedman, *Intersection homology Künneth theorems* – **Math. Ann.** 343 (2009), 371-395
- Greg Friedman, *Cobordism of disk knots* – **Israel J. Math.** 163 (2008), 139-188
- Greg Friedman, *Intersection homology of stratified fibrations and neighborhoods*- **Advances in Math.** 215 (2007), 24-65
- Greg Friedman, *There exist non-trivial PL knots whose complements are homotopy circles* – **Fund. Math.** 193 (2007), 1-6
- Greg Friedman and Gil Kalai, *A multiperversity generalization of intersection homology* - **Pure Appl. Math. Q.** 3 (2007), Special Issue: In honor of Robert MacPherson, Part 3 of 3, 205--224
- Greg Friedman, *Singular chain intersection homology for traditional and super-perversities* - **Trans. Amer. Math. Soc.** 359 (2007), 1977-2019.
- Greg Friedman, *Superperverse intersection cohomology: stratification (in)dependence* - **Math. Z.** 252 (2006),

49-70

- Greg Friedman, *Spinning constructions for higher-dimensional knots* -Chapter 4 of the **Handbook of Knot Theory** (Menasco and Thistlethwaite eds.), Amsterdam: Elsevier, 2005
- Greg Friedman, *Intersection homology of regular and cylindrical neighborhoods* - **Topology Appl.** 149 (2005), 97-148
- Greg Friedman, *Groups of locally-flat disk knots and non-locally-flat sphere knots* - **J. Knot Theory Ramifications** 14 (2005), 189-215
- Greg Friedman, *Intersection Alexander polynomials* - **Topology** 43 (2004), 71-117
- Greg Friedman, *All frame-spun knots are slice* - **Proc. Amer. Math. Soc.** 132 (2004), 3103-3109
- Markus Banagl and Greg Friedman, *Triangulations of 3-dimensional pseudomanifolds with an application to state-sum invariants* - **Algebraic and Geometric Topology** 4 (2004), 521-542
- Greg Friedman, *Alexander polynomials of non-locally-flat knots* - **Indiana Univ. Math. J.** 52 (2003), 1479-1578
- Greg Friedman, *Stratified fibrations and the intersection homology of the regular neighborhoods of bottom strata*, **Topology Appl.** 134 (2003), 69-109

b. Non-refereed publications:

- Greg Friedman, **Singular Intersection Homology**, New Mathematical Monographs Vol. 33, Cambridge University Press, 2020, 798+xxiii pages
- 47 reviews of articles and one review of a book in Math Reviews; two reviews for Zentralblatt MATH

c. Materials or activities accepted or scheduled but not yet printed, released or presented:

- Greg Friedman and Efton Park, *Chern classes and unitary equivalence of normal matrices over topological spaces*, to appear in the **Journal of Operator Theory**

d. Materials under active review by external editors or referees:

- Greg Friedman, Anibal Medina-Mardones, and Dev Sinha, *Flowing from intersection product to cup product*, submitted

e. Papers presented, participation on panels, etc., at scholarly meetings.

- University of Texas at Dallas Geometry Topology Dynamical Systems Seminar – 5/23
- Spring Topology and Dynamics Conference – Online – 5/21
- Geometric Topology Workshop – Milwaukee, WI – 5/19
- Geometric Topology Workshop – Grand Rapids, MI – 6/18
- Workshop on Noncommutative Geometry and Index Theory for Group Actions and Singular Spaces – College Station, TX – 05/18
- Topology Day – University of Colorado – Boulder, CO – 2/18
- Topology Seminar – Texas State University – San Marcos, TX – 10/17
- Geometric Topology Workshop – Provo, UT – 6/17
- Topology and Dynamical Systems Seminar – University of Texas at Dallas – Richardson, TX – 4/17
- Spring Topology and Dynamics Conference – Jersey City, NJ – 3/17
- Five-hour mini-course at the Topology, Stratified Spaces and Particle Physics Summer School as part of the Focus Program on Topology, Stratified Spaces and Particle Physics at The Fields Institute for Research in Mathematical Sciences – Toronto, Canada – 8/16
- Geometric Topology Workshop – Colorado Springs, CO – 6/16
- Mathematics Colloquium at Sam Houston State University – Huntsville, TX – 4/16
- Mathematics Seminar at Université du Québec à Montréal– Montreal, Canada – 4/16
- Spring Topology and Dynamics Conference – Waco, TX – 3/16
- Spring Topology and Dynamics Conference – Bowling Green, OH – 5/15
- Knot Theory and Its Applications to Physics and Quantum Computing – Richardson, TX – 1/15
- Geometric Topology Workshop – Milwaukee, WI – 6/14
- Geometric Topology Workshop – Grand Rapids, MI – 6/13

- Ten-hour Course on Intersection Homology – Lille, France – 5/13
- Geometric Topology Workshop – Corvallis, OR – 6/12
- Topology Seminar – University of Oregon – Eugene, OR – 5/12
- Geometry and Topology Seminar - University of Wisconsin, Madison - Madison, WI – 4/12
- Stratified Spaces: Joining Analysis, Topology and Geometry – Oberwolfach, Germany – 12/11 (joint work presented by collaborator while in attendance)
- Public lecture in the TCU Department of Mathematics on The 85 Ways to Tie a Tie - 10/11
- Topology and Analysis in Interaction – Cortona, Italy – 6/11
- Geometric Topology Workshop – Park City, UT – 5/11
- Spring Topology and Dynamical Systems Conference – Tyler, TX – 3/11
- Dartmouth College Topology Seminar – Hanover, NH - 12/10
- Dartmouth College Mathematics Colloquium – Hanover, NH – 12/10
- Geometric Topology Workshop – Colorado Springs, CO - 6/10
- Purdue University Topology Seminar – West Lafayette, IN – 4/10
- Midwest Topology Seminar – West Lafayette, IN – 2/09
- NSF-CBMS Conference on Knots and Topological Quantum Computing - Edmond, OK - 7/08
- Singularities in Geometry and Topology in honor of the 60<sup>th</sup> birthday of Sylvain Cappell – New York, NY - 3/08
- Rice University Topology Seminar - Houston, TX - 11/07
- Spring Topology and Dynamics Conference – Rolla, MO - 3/07
- Texas Geometry and Topology Conference – Fort Worth, TX – 3/07
- Purdue University Topology Seminar – West Lafayette, IN - 10/06
- Frank Stone Research Lecture at TCU – Fort Worth, TX - 9/06
- Courant Institute of Mathematical Sciences at NYU - New York, NY - 4/06
- Vanderbilt University Math Club - Nashville, TN - 3/06
- Union College Mathematics Conference - Schenectady, NY - 12/05, 11/03
- Vanderbilt University Topology and Group Theory Seminar - Nashville, TN - 12/05, 11/05, 10/05, 11/04, 12/03
- Tennessee State University Mathematics Seminar - Nashville, TN - 11/05
- Hebrew University Topology Seminar - Jerusalem, Israel - 6/05
- Bowdoin College Mathematics Seminar - Brunswick, ME - 4/05
- Conference on "Submanifolds, Singular Varieties, and Stratified Spaces" - New York, NY - 3/05
- University of Waterloo Mathematics Colloquium - Waterloo, Ontario, Canada - 2/05
- North Dakota State University Mathematics Colloquium - Fargo, ND - 2/05
- Cleveland State University Mathematics Colloquium - Cleveland, OH - 2/05
- United States Naval Academy Mathematics Colloquium - Annapolis, MD - 2/05
- Texas Christian University Mathematics Colloquium - Fort Worth, TX - 2/05
- Vanderbilt University Mathematics Colloquium - Nashville, TN - 1/05
- Yale University Topology Seminar - New Haven, CT - 9/04, 9/03, 10/02, 11/01, 10/01
- Lehigh Geometry/Topology Conference - Bethlehem, PA - 6/03 and 6/04
- Valley Geometry Seminar - University of Massachusetts - Amherst, MA - 4/04
- Wesleyan University Topology Seminar - Middletown, CT - 4/04
- Workshop on Topology of Manifolds and Homotopy Theory - Banff International Research Station, Banff, Canada - 3/04
- Kansas State University Mathematics Colloquium - Manhattan, KS - 12/03
- Northeastern University Geometry-Algebra-Singularities-Combinatorics Seminar - Boston, MA - 11/03
- AMS Special Session on Singularities of Complex Hypersurfaces - New York, NY - 5/03
- Brandeis University Topology Seminar - Waltham, MA - 4/02
- University of Wisconsin Topology Seminar - Madison, WI - 3/02
- Workshop on Topology of Manifolds and Group Actions - Centre de Recherches Mathématiques, Montréal, Quebec, Canada - 8/01

16. Editorships, consultantships, professional and creative activities, and professional engagements:

- Associate Editor, Carus Mathematical Monographs, MAA, 2022 – present
- Organizing Committee Member – Geometric Topology Workshop – 2014-present
- Steering Committee Member (elected) – Spring Topology and Dynamics Conference – 2012-present (4 terms)
- Dissertation evaluator for Ismail Razack's Ph.D. thesis at l'Université de Picardie Jules Verne – 2023
- Co-organizer of the Professor Frederico and Joana Xavier Endowed Mathematics Lectureship, April 2023

- Co-organizer of Texas Geometry and Topology Conference, April 2023, Fort Worth, TX
- Simons Foundation Collaboration Grants for Mathematicians grant proposal reviewer - 2022
- Dissertation evaluator for Martin Rabel's Ph.D. thesis at Universität Heidelberg – 2021
- Lead co-organizer of the 39th Annual Geometric Topology Workshop, June 6-8, 2022 – held online
- Lead co-organizer of the 38th Annual Geometric Topology Workshop, June 15-17, 2021 – held online
- Thesis evaluator for Johannes Feldmann's Master's thesis at Universität Heidelberg - 2019
- Taught TCU Silver Frogs Lifelong Learning Institute lecture course on “What is Topology?” – Fort Worth, TX – 10/19
- Special Session Co-organizer for Geometric Topology - Spring Topology and Dynamics Conference, March, 2019, Birmingham, AL
- Co-organizer of Texas Geometry and Topology Conference, Feb. 2019, Fort Worth, TX
- Co-organizer of Simons Foundation Conference on Singularities: Geometric, Topological, and Analytic Aspects, August, 2018, New York
- Lead organizer – NSF/CBMS Conference on Applications of Polynomial Systems , June 4-8, 2018, Fort Worth, TX
- Taught TCU Silver Frogs Lecture Course – Fort Worth, TX – 3/16
- Co-organizer – Texas Geometry and Topology Conference – Fort Worth, TX - February 2016
- Principal Organizer – Geometric Topology Workshop at TCU, 6/15
- Presented a public lecture in TCU's Faculty Favorite Lecture Series on “The 85 Ways to Tie a Tie” - 10/15/14
- Gave a talk in TCU's Parabola Math Club on “Hilbert's Hotel: to infinity and beyond” – 10/29/14
- National Science Foundation grant proposal review panelist - 2014
- Principal Section Co-organizer - Spring Topology and Dynamics Conference, March, 2014, Richmond, VA
- Co-organizer - Special Session on Singular Spaces in Geometry, Topology, and Algebra at the Western Sectional Meeting of the American Mathematical Society – Boulder, CO – April, 2013
- Co-organizer – Texas Geometry and Topology Conference – Arlington, TX - February 2013
- Calculus textbook consultant for Cengage publishing - 2012
- Invited Section Co-organizer - Spring Topology and Dynamics Conference, March 22-24, 2012, Mexico City
- Co-organizer (with Robert Doran and Scott Nollet) – NSF/CBMS Conference on Hodge Theory, Complex Geometry, and Representation Theory, June 18-22, 2012, Fort Worth, TX
- Coordinating editor - Greg Friedman, Eugénie Hunsicker, Anatoly Libgober, Laurentiu Maxim (editors), **Topology of Stratified Spaces**, Mathematical Sciences Research Institute Publications 58, Cambridge University Press 2011
- Editor - Robert Doran, Greg Friedman, and Jonathan Rosenberg (editors), **Superstrings, Geometry, Topology, and C\* Algebras**, Proceedings of Symposia in Pure Mathematics 81, Providence: American Mathematical Society, 2010
- Co-organizer – Texas Geometry and Topology Conference, February 2010
- Figure proofreader for Briggs-Cochran calculus book for Pearson publishing - 2009-2010
- Chapter class-tester for Briggs-Cochran calculus book for Pearson publishing - 2009
- Co-organizer (with Robert Doran) – NSF/CBMS Conference on Topology, C\* Algebras, and String Theory, May 18-22, 2009 Fort Worth, TX
- Co-organizer (with Eugénie Hunsicker, Anatoly Libgober, and Laurentiu Maxim) – Workshop on the Topology of Stratified Spaces, September 8-12, 2009, at the Mathematical Sciences Research Institute, Berkeley, CA
- Co-organizer – Texas Geometry and Topology Conference, March, 2007
- Reviewer – Math Reviews (50 article reviews, 2 book reviews)
- Journal referee – Manuscripta Mathematica, Theory and Applications of Categories; SIGMA; Journal of Singularities; Journal of Topology and Analysis; Topology Proceedings, New York Journal of Mathematics; Journal of the Mathematical Society of Japan; Proceedings of the American Mathematical Society; Proceedings of the Royal Society of Edinburgh (Series A); Geometry & Topology; Selecta Mathematica; Monatshefte für Mathematik; Mathematics; Algebraic and Geometric Topology; Advances in Mathematics; Journal für die reine und angewandte Mathematik (Crelle's Journal); MAA Monthly; Geometriae Dedicata; Journal of Singularities; Lecture Notes in Mathematics; Proceedings of the Workshop on the Topology of Stratified Spaces; Homology, Homotopy and Applications; Journal of Knot Theory and Its Ramifications; Algebraic and Geometric Topology (twice); Illinois Journal of Mathematics (twice); Topology and Its Applications (twice); International Journal of Mathematics; Discrete and Computational Geometry
- Conceived and organized *Yale University Graduate Student Summer Colloquium* - 6/04-8/04
- Conceived, organized, and lectured in *Yale University Summer Topology Seminar* (7 lectures) - 6/03-8/03
- College Fellow - Calhoun College, Yale University - 2002-2005
- Freshman Advisor - Yale University - 2003-2005

- Senior Project Review Committee Member - Yale University Dept. of Mathematics - 2002, 2003, 2004
- Speaker - Yale University Undergraduate Math Club – 5/03
- Textbook Reviewer - *Multivariable Mathematics* by Theodore Shifrin, John Wiley & Sons, Inc.
- Editor and proofreader for Saugata Basu, Richard Pollack, and Marie-Francoise Roy, *Algorithms in Real Algebraic Geometry*, Springer, Berlin (2003)

17. Academic advising activities:

- Undergraduate Summer Advising for new Math Students – 2020-present
- Undergraduate Advisor - TCU - 2008 – 2021
- Committee member for Honors Thesis in Chemistry, Spring 2020
- Graduate Student Advisor for Kyle Matthews – 2011-2016
- Ph.D. Advisory Committee member for Luis Aguirre – 2016-2018
- Ph.D. Advisory Committee member Nathanael Hellerman – 2016-2018
- Ph.D. Advisory Committee member Fazle Rabby – 2016-2019
- Ph.D. Advisory Committee member for Douglas Wagner – 2017-2021
- Freshman Advisor - Yale University – 2003-2005

18. Departmental service:

- Chair of the Department of Mathematics, 2019-present
- Chair – Dept. of Mathematics Hiring Process Committee
- Hiring Manager and Committee Member – Hiring Committee for Statistics Asst. Prof. search 2022-2023
- Hiring Manager and Committee Member – Hiring Committee for Pure Math Asst. Prof. search 2022-2023
- Member – Dept. of Mathematics First-Year Seminar Committee - 2022
- Administrative Assistant Hiring Committee – 2018, 2022 (Chair)
- Member - TCU Mathematics Hiring Committee - 2007-2008, 2008-2009, 2014-2015, 2015-2018, 2019-2020, 2021-2022
- TCU Pi Mu Epsilon Honor Society advisor – 2020-2021
- TCU Department of Mathematics graduate student mentor - 2012-2013, fall 2014, fall 2015, fall 2016, fall 2017, fall 2018
- Chair, Department of Mathematics Hiring Committee – 2015-2018
- Assessment Coordinator – TCU Mathematics Department Graduate Program – 2012-2019
- Member – TCU Mathematics Departmental Advisory Committee – 2011-2017
- Chair – TCU Mathematics Departmental Advisory Committee – 2012-2013, 2014-2015, 2016-2017
- Acting Chair of Department of Mathematics, 7/11/13-7/28/13, 5/11/14-5/17/14, 7/20/14-8/9/14, 7/20/15-8/7/15, 5/9/16-5/13/16, 7/25/16-8/5/16, 12/14/16-12/16/16, 5/15/17-5/26/17, 7/17/2017-8/4/2017, 7/2/2018-7/20/2018
- Grader - TCU Calculus Bee – 2007, 2009, 2011, 2012, 2014-2018
- Member - TCU Mathematics Graduate Program Committee – 2009-present
- Member (and occasional chair for specific exams) – TCU Mathematics Graduate Program Preliminary Exam Committee – 2010-present
- Participant - Metroplex Geometry and Geometric Analysis Seminar – 2006-present
- TCU Department of Mathematics student exit survey interviewer – 2012-present
- Department of Mathematics Weekly Tea coordinator – fall 2016
- Member - TCU Mathematics Bridge Course Committee, 2014-2016
- Member of TCU Mathematics Associated Requirements Committee - 2014
- Chair – Math Department Tenured Faculty Review Committee – Fall, 2012
- Secretary – Math Department Tenured Faculty Review Committee – Fall, 2011
- Member of TCU Mathematics Graduate Program Algebra and Topology Preliminary Exam Syllabus Committees, 2011
- Member – TCU Mathematics tenured faculty review committee – Fall, 2010
- Chair – Math Department calculus textbook selection committee – 2010-2011
- Member – Pi Day faculty robot fighting team - March, 2010
- Assistant Webmaster for Current Events – Fall 2009
- Helped edit TCU Math. Department faculty review and evaluation policies – Fall, 2009
- Participant/Organizer – TCU K-theory seminar, Fall 2009
- Member - TCU Mathematics Graduate Program Proposal Committee - 2007-2009



- Participant and organizer - TCU Lie Groups Seminar - 2007-2009
- Participant and organizer - TCU Quillen K-Theory Seminar – 2007-2008
- Math Department Representative – TCU Major/Minor Fair – 2007, 2008, 2009

19. College service:

- Moderator - College of Science and Engineering (CSE) Honors Research Forum – April 2023
- TCU College of Science and Engineering ad hoc Faculty Workload Equity Model committee, 2022-2023
- Dean’s ad hoc Deans’ Award nominee committee – Spring 2021
- Dean’s ad hoc PIRE grant review committee – fall 2016
- TCU College of Science and Engineering Curriculum Committee (elected) – 2012-2015
- TCU College of Science and Engineering Curriculum Committee (substitute member) – fall 2015
- Poster Judge/Visitor – TCU College of Science and Engineering Student Research Symposium – 2010-present

20. University service:

- TCU Chairs Council – 2018-present
- TCU Faculty Senator - 2008 – present (five terms)
- Member – TCU Faculty Senate Academic Excellence Committee – 2008-2017, 2022-present
- TCU Academic Appeals Committee, 2007-2010, 2012-present
- Chair TCU Academic Appeals Committee, 2015-present
- Vice President – Phi Beta Kappa – 2016-present
- Guide - Phi Beta Kappa initiation ceremony – 2013-present
- Phi Beta Kappa Membership Committee at TCU – 2007-present
- TCU Faculty Senate Ad Hoc Academic Progression Committee – Spring 2023
- SACS review Committee J – 2021-2022
- Selection Committee member for Jim Bolen Math Competition scholarship, 2019, 2020
- Administrative Secretary of the TCU Faculty Senate – 2016-2022 (6 terms)
- TCU Faculty Senate Executive Committee – 2016-2022
- TCU Faculty Senate Academic Profile Committee – 2016-2017
- Member – TCU Faculty Senate Educational Evaluation Committee – 2017-2018, 2019-2022
- Member – TCU Faculty Senate Governance Committee – 2018-2019
- Chair – TCU Faculty Senate Academic Excellence Committee – 2010-2013, 2014-2016
- Dean Search Committee - Harris College of Nursing & Health Sciences, Spring 2019
- Panelist – Graduate Studies Job Market Boot Camp, 12/7/2017
- Member of TCU Honors College Student Achievement and GPA Task Force, 2014-2016
- Acting Chair TCU Academic Appeals Committee – fall 2014
- TCU Commencement Faculty Marshal – spring 2016, spring 2017
- Led TCU Common Reading Section for entering students – 2007-2012, 2014-2015, 2017
- TCU Bookstore Committee – 2015-2016
- TCU Bookstore Redesign Committee – 2016-2017
- Judge – Seniors Honors Presentations – 2013, 2014, 2015, 2016
- Faculty Senate representative on the Koehler Center Advisory Council – 2011-2013
- TCU ad hoc Room Usage Committee – 2012
- TCU Faculty Senate liaison to University Evaluation Committee – 2010-2012
- Panelist for New Faculty Orientation Faculty Panel – Fall 2011, Spring 2012
- Assistant Guide - Phi Beta Kappa 2012
- TCU Commencement Banner Bearer – Spring 2009, 2010, 2012
- TCU Faculty Senate ad hoc Plus/Minus Review Committee – 2011
- Assessment ad hoc Retention Statistics Committee member - 2011
- TCU Faculty Senate liaison to ad hoc Chair Training Committee – 2010
- Beta Tester for TCU grant profile software – 2009
- Member – Provost's Climate Change Curriculum Committee – Spring 2009

21. Community activities directly related to professional skills:

- Mentor - National Alliance for Doctoral Studies in the Mathematical Sciences, 2021-present
- Led TCU Math Circle discussion for 5<sup>th</sup>-8<sup>th</sup> graders – May, 2019
- Mathematics Judge - Fort Worth Regional Science and Engineering Fair – Annually 2009-2022 (category chair 2011, 2012, 2018, 2020)
- Panelist – Fort Worth Life Sciences Coalition Panel on Technical Writing – June, 2012
- Judge - Como Montessori School Science Fair - 2009
- Volunteer Grader - MATHCOUNTS, 2007, 2008, 2009, 2010, 2011
- Judge - Wilbur Cross High School Science Fair, New Haven, CT – 02/04

22. Membership in professional organizations:

American Mathematical Society (AMS)  
 Mathematical Association of America (MAA)

23. Professionally related honors and awards:

- Named John William and Helen Stubbs Potter Professor of Mathematics 2022-2025
- TCU Deans' Award for Research and Creativity, 2020
- MSRI Award (with Eugénie Hunsicker, Anatoly Libgober, and Laurentiu Maxim) to hold Workshop on the Topology of Stratified Spaces, September 8-12, 2008, Berkeley, CA
- David Howell Premium for Outstanding Achievement in Mathematics, Brown University, 5/96
- Phi Beta Kappa Honor Society, 4/96 (elected)
- Sigma Xi Science Honor Society, 4/96 (elected)

24. Other professionally related activities:

- TCU Research Leave – Fall, 2013

**Accomplishments as Chair of the TCU Department of Mathematics**

Ongoing Major Responsibilities

- Schedule creation and enrollment management
- Budget management
- Personnel management (18-21 full-time employments, up to 13 adjuncts, 1 administrative assistant)
- Curriculum management
- Faculty evaluation for tenure, promotion, and merit salary increases as well as regular faculty reviews
- Organize and run department meetings
- Manage student and faculty issues as they arise

Selected Administrative Accomplishments 2019-present

- Led organization of Green Honors Chair visit by Dr. Kevin Knudson (University of Florida), April 2023
- Hired and trained two new Math Department Administrative Assistants
- In process – Organized and chaired Hiring Process Committee to re-tool department hiring procedures
- Oversaw development of first-year seminar course for department majors that will run for the first time in Spring 2022
- Managed hiring process to hire Instructors in 2020 and 2021; in process to hire two Tenure Track Assistant Professor in 2023
- Hired seven new adjunct instructors
- Oversaw the nominations of two colleagues for tenure, four for Instructor promotion, three for emeritus status, and several junior faculty reviews and 5-year post-promotion reviews
- Oversaw creation of joint Math and Computer Science major in Data Science
- In 2020-2021, managed department through combined COVID pandemic and university reallocation of assets that resulted in unexpected loss of three permanent faculty member to retirement or resignation, drastic cuts to department operating budget, and ongoing major complications to course scheduling
- On short notice, worked with Math faculty, Neeley School, Admissions, and First-Year Experience to develop and implement a placement test for Math 10283 Applied Calculus due to changes in TCU's SAT/ACT requirements

- With Dr. Susan Staples and Valerie Springer, developed new summer advising protocols for incoming Math majors
- Established a Math Department Long-term Planning Committee
- Wrote a comprehensive department advising manual for faculty and students
- Instituted procedure of pairing new faculty advisors with mentors to help them learn how to advise students
- Instituted teaching mentoring for all new faculty, both full- and part-time
- Instituted minute-taking at department meetings followed up with action item e-mails
- Addition of a new “Careers in Mathematics” section to the department web site and acquisition of math career books for student use in the department office
- Led organization of Green Honors Chair visit by Dr. Sommer Gentry (USNA and Johns Hopkins), February 2020
- Organized department external review in Spring 2021
- Created Department assessment team
- Established a committee to review and update the required syllabus for Math 30853 Statistics.
- Created a Math Chair manual (in progress)
- Shepherded a variety of catalog proposals and curricular changes through the department and on to the College Curriculum Committee
- Created position of departmental Data Science liaison to the Computer Science Department
- Created position of Assistant Actuarial Director
- Held department advising workshop
- Worked with the Registrar’s office and the department on an improved system to identify possible candidates for the Pi Mu Epsilon math honor society and then to decide on membership offers
- Clarified the department’s role in choosing the Del Conte Scholarship winner and lead the department in selecting a new winner annually

### **Professional Development**

- TCU Academic Chairs & Directors Academy, May 16-17, 2023
- TCU Case Studies for Chairs & Directors workshop, January 13, 2023
- CSE Leadership Book Club, 2022-present
- Attended Dept. of Mathematics Seminar for Teaching Innovations in Math, Nov. 2022
- Communicating Mathematics Workshop, hybrid/Ithaca, NY – Aug. 8-11, 2022
- TCU Chairs Workshop, May 10-11, 2022
- TCU Selection Committee Training, September 2021
- New Chair Training, TCU College of Science and Engineering, Fall 2021
- Attended Unconscious Bias Training, 12/4/2020
- Completed TCU Hybrid Design & Delivery training – Summer 2020
- Completed TCU Ramping Up Rapidly with TCU Online training – Summer 2020
- SiteImprove Web Accessibility Training – Summer 2020
- Completed Online Conflict of Interest Training 1/13/2020
- Attended Bystander Intervention Workshop – 9/11/2019
- Attended Leading and Influencing as a Department Chair Workshop at TCU – 5/21/19-5/22/19
- Attended TCU Chair Training Workshop – 5/4/17-5/5/17
- Attended TCU Online Pilot Faculty Lunch – 3/4/16
- Attended TCU Assessment Workshop (parts 1,2, 3) – 9/25/15, 11/13/15, 1/29/16
- Attended Koehler Center Faculty Focus Lunch – 10/28/15
- Attended New Math Pathways presentation at Tarrant County Community College (Southeast Campus) – 9/19/14
- Attended Koehler Center Teaching and Learning Conversation, 3/4/14
- Attended Koehler Center Workshop: Teaching and Learning Conversations - 10/13
- Attended Koehler Center Workshop: Developing the Teaching Skills of Graduate Teaching Assistants - 3/11
- Attended Koehler Center Workshop: Student Feedback That Works - 3/11
- Attended Koehler Center Workshop: Academic Rigor and Your Students Pt. I - 10/11
- Attended Koehler Center Workshop: Academic Rigor and Your Students Pt. II -11/11

### **Research Conferences Attended:**

- Texas Geometry and Topology Conference – Houston, TX – 11/23

- Geometric Topology Workshop – Colorado Springs – 6/23
- Texas Geometry and Topology Conference – Fort Worth, TX – 4/23 (co-organizer)
- Spring Topology and Dynamics Conference – online – 3/23
- 39<sup>th</sup> Annual Geometric Topology Workshop – online – 6/22
- Spring Topology and Dynamics Conference – hybrid/Waco, TX – 3/22
- 38<sup>th</sup> Annual Geometric Topology Workshop – online – 6/21
- Spring Topology and Dynamics Conference – online – 5/21 (invited talk)
- Four Manifolds: Confluence of High and Low Dimensions at The Fields Institute for Research in Mathematical Sciences – Toronto, Canada – 7/19
- Geometric Topology Workshop – Milwaukee, WI – 5/19 (contributed talk – organizer)
- Spring Topology and Dynamics Conference – Birmingham, AL – 3/19 (session organizer)
- Texas Geometry and Topology Conference – Fort Worth, TX – 2/19 (co-organizer)
- Simons Foundation Conference on Singularities: Geometric, Topological, and Analytic Aspects – New York - 8/18
- Geometric Topology Workshop – Grand Rapids, MI – 6/18 (contributed talk – organizer)
- NSF/CBMS Regional Conference on Applications of Polynomial Systems – 6/18 (organizer)
- Noncommutative geometry and index theory for group actions and singular spaces – College Station, TX – 05/18 (invited talk)
- Spring Topology and Dynamics Conference – Auburn, AL – 03/18
- Texas Geometry and Topology Conference – Austin, TX – 11/17
- Topology and Analysis in Interaction - Cortona, Italy – 6/17
- Geometric Topology Workshop – Provo, UT – 6/17 (contributed talk – organizer)
- Spring Topology and Dynamics Conference – Jersey City, NJ – 3/17 (invited talk)
- Joint AMS/MAA/SIAM National Meeting – Atlanta, GA – 1/17
- Texas Geometry and Topology Conference – College Station, TX – 11/16
- (Three Week) Focus Program on Topology, Stratified Spaces and Particle Physics at The Fields Institute for Research in Mathematical Sciences - Toronto, Canada – 8/16
- Analysis, Geometry and Topology of Stratified Spaces – CIRM, Luminy, France – 6/16
- Geometric Topology Workshop – Colorado Springs, CO – 6/16
- Topology in Dimension 3.5 – Houston, TX – 5/16
- Spring Topology and Dynamics Conference – Waco, TX – 3/16 (invited talk)
- Texas Geometry and Topology Conference – Fort Worth, TX – 2/16 (co-organizer)
- Joint AMS/MAA/SIAM National Meeting – Seattle, WA – 1/16
- Symposium on the Geometry and Topology of Manifolds – Vancouver, Canada - 7/15
- Geometric Topology Workshop – Fort Worth, TX – 6/15 (principal organizer)
- Spring Topology and Dynamics Conference – Bowling Green, OH – 5/15 (invited talk)
- Stratified spaces in geometric and computational topology and physics – Madison, WI – 4/15
- Joint AMS/MAA/SIAM National Meeting – San Antonio, TX – 1/15
- Knot Theory and Its Applications to Physics and Quantum Computing – Richardson, TX – 1/15 (invited talk)
- Topology and Analysis in Interaction – Cortona, Italy – 6/14 (invited participant)
- Geometric Topology Workshop – Milwaukee, WI – 6/14 (contributed talk - organizer)
- Spring Topology and Dynamics Conference – Richmond, VA – 3/14 (principal session organizer)
- Workshop on Topological Systems: Communication, Sensing, and Actuation – Minneapolis, MN – 3/14
- Workshop on Modern Applications of Homology and Cohomology - Minneapolis, MN – 11/13
- Workshop on Topological Analysis of Data – Minneapolis, MN – 10/13
- Geometric Topology Workshop – Grand Rapids, MI – 6/13
- Western Sectional Meeting of the American Mathematical Society – Boulder, CO – 4/13
- Texas Geometry and Topology Conference – Arlington, TX – 2/13
- Workshop on High Dimensional Topology - South Bend, IN - 12/12
- Algebraic Topology: Applications and New Directions - Stanford, CA – 7/12
- Geometric Topology Workshop – Corvallis, OR – 6/12 (contributed talk)
- NSF/CBMS Regional Conference in the Mathematical Sciences on Hodge Theory, Complex Geometry, and Representation Theory - Fort Worth, TX – 6/12 (co-organizer)
- Spring Topology and Dynamics Conference, March 22-24, 2012, Mexico City (special section co-organizer)
- Stratified Spaces: Joining Analysis, Topology and Geometry – Oberwolfach, Germany – 12/11 (invited talk given by collaborator)
- Topology and Analysis in Interaction – Cortona, Italy – 6/11 (invited talk)
- Geometric Topology Workshop – Park City, UT – 5/11 (contributed talk)
- Spring Topology and Dynamical Systems Conference – Tyler, TX – 3/11 (invited talk)
- Texas Geometry and Topology Conference – Lubbock, TX - 2/11

- Geometric Topology Workshop – Colorado Springs, CO – 6/10 (contributed talk)
- Georgia Topology Conference – Athens, GA – 5/10
- Midwest Topology Seminar – Evanston, IL – 4/10
- Texas Geometry and Topology Conference – Fort Worth, TX – 2/10 (co-organizer)
- NSF/CBMS Conference on Algebraic Topology in Applied Mathematics – Cleveland, OH - 8/09
- NSF/CBMS Conference on Topology,  $C^*$  Algebras, and String Theory, May 18-22, 2009, Fort Worth, TX (co-organizer)
- Conference in Honor of the 60<sup>th</sup> Birthday of Steve Ferry – Chicago, IL – 3/09
- Midwest Topology Seminar – West Lafayette, IN – 2/09 (invited talk)
- Joint AMS/MAA/SIAM National Meeting – Washington, DC – 1/09
- MSRI Workshop on the Topology of Stratified Spaces - Berkeley, CA - 9/08 (co-organizer)
- NSF-CBMS Conference on Knots and Topological Quantum Computing - Edmond, OK - 7/08 (semi-invited talk)
- Singularities in Geometry and Topology in honor of the 60<sup>th</sup> birthday of Sylvain Cappell – New York, NY – 3/08 (invited talk)
- Texas Geometry and Topology Conference – Lubbock, TX - 2/08
- Joint AMS/MAA/SIAM National Meeting - San Diego, CA – 1/08
- Geometry and the Imagination: A conference in honor of Bill Thurston's 60<sup>th</sup> Birthday – Princeton, NJ - 6/07
- Spring Topology and Dynamics Conference – Rolla, MO – 3/07 (invited talk)
- Texas Geometry and Topology Conference – Fort Worth, TX – 3/07 (invited talk, co-organizer)
- Texas Geometry and Topology Conference – Houston, TX - 10/06
- Noncommutative Geometry and Operator Algebras Conference – Nashville, TN - 5/06
- Graduate Student Topology Conference – Bloomington, IN - 4/06
- Union College Mathematics Conference – Schenectady, NY – 11/03, 12/05 (contributed talks)
- Conference on "Submanifolds, Singular Varieties, and Stratified Spaces" in honor of Julius Shaneson - New York, NY – 3/05 (invited talk)
- Cornell Topology Festival – Ithaca, NY – 5/03, 5/04, 5/05
- Joint AMS/MAA/SIAM National Meeting – Atlanta, GA – 1/05
- Geometry, Combinatorics, and Algebraic Groups – conference in honor of Robert MacPherson – Princeton, NJ - 10/04
- Knots in Vancouver – Vancouver, BC, Canada – 7/04
- Lehigh Geometry/Topology Conference - Bethlehem, PA - 6/03, 6/04 (contributed talks)
- Workshop on Topology of Manifolds and Homotopy Theory - Banff International Research Station, Banff, Canada – 3/04 (invited talk)
- Cassonfest – conference in honor of Andrew Casson – Austin, TX - 5/03
- AMS Sectional Meeting - New York, NY – 4/03 (invited talk)
- Workshop on Topology of Manifolds and Group Actions - Centre de Recherches Mathématiques, Montréal, Quebec, Canada - 8/01 (invited talk)