Curriculum Vita

LEWIS D. LUDWIG

Department of Mathematics and Computer Science
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Education

Ohio University Athens, Ohio
Ph.D. in Mathematics March 2001
Thesis title:"Topological separation axioms: α-normal and β-normal"
Thesis supervisor: Alexander V. Arhangel'skii

Miami University Oxford, Ohio
Masters of Science in Mathematics May 1995

College of Mount St. Joseph Cincinnati, Ohio
Masters of Education August 1995

Bachelor of Arts in Mathematics May 1993

Bachelor of Science in Computer Information and Business Administration May 1991

Research Publications[1]

- Ludwig, Lewis D.; Evans, Erica L.; Paat, Joseph S., An infinite family of knots whose mosaic number is realized in non-reduced projections, J. Knot Theory Ramifications **22** (2013) no. 7, 11 pp.

- Arbisi, Pamela; Ludwig, Lewis D., *Linking in Straight-edge embeddings of K_7*, J. Knot Theory Ramifications, **19** (2010), no. 11, 1431-1447 .

- Ludwig, Lewis D.; Nyikos, Peter; John E. Porter, *Dowker Spaces Revisited*, Tsukuba J. Math **34** (2010), no. 1, 1-11.

- Foisy, Joel; Ludwig, Lewis D., *When graph theory meets knot theory. Communicating mathematics*, 67–85, Contemporary Mathematics **479** *Amer. Math. Soc.*, Providence, RI, 2009.

- Liu, Chuan; Lin, Shou; Ludwig, Lewis D., *Spaces with a σ-point-discrete Weak Bases*, Tsukuba J. Math., **32** (2008), no.1, 165-177.

- Liu, Chuan; Ludwig, Lewis D. *Nagata-Smirnov revisited: spaces with σ-WHCP bases.* Topology Proc. **29** (2005), no. 2, 559–565.

[1] Throughout, highlighted entries depict activities accomplished since last senior review.

- Liu, Chuan; Ludwig, Lewis D. *κ-Frchet Urysohn spaces.* Houston J. Math. 31 (2005), no. 2, 391–401.

- Arhangel'skii, A. V.; Ludwig, Lewis D., *On α-normal and β-normal spaces.* Comment. Math. Univ. Carolin. **42** (2001), no. 3, 507–519.

- Burke, Dennis K.; Ludwig, Lewis D., *Hereditarily α-normal spaces and infinite products*, Topology Proc. **25**, (2000), Summer, 291–299.

- Ludwig, Lewis D.; Szeptycki, Paul J. *A consistent example of a β-normal, non-normal space.* Topology Proc. **25** (2000), Spring, 251–254.

Publications Under Review

- Ludwig, Lewis D., *Introduction to Proofs Over-Easy: A Low-Cost Alternative to the Flipped Classroom*, submitted April, 2014 to the Mathematical Association of America *Notes* Board for the MAA *Notes* Volume entitled *Beyond Lecture: Techniques to Improve Proof-Student Writing Across the Curriculum.*

- Flapan, Erica et al., *From Molecules to the Universe: An Introduction to Topology*, undergraduate textbook in final editing stages accepted for publication by the American Mathematical Society series the *Student Mathematical Library.* Ludwig coauthored Chapters 4 and 11.

Other Publications

- Higgins, Aparan; Ludwig, Lewis; Servatius, Brigitte, *Papers, posters, and presentations as outlets for undergraduate research*, Involve **7** (2014), no. 3, 327-333.

- Edwards, Annabel, Ludwig, Lewis D., *Diffusion and random walks*, peer reviewed education materials for mathematics and chemistry developed for the Capital University National Science Foundation grant (DUE 9952806): *Computational science across the curriculum.* Subcontract amount: $2,000. Award period March-December, 2011.

- Ludwig, Lewis D., Smith, Geoff R. *Using matrix algebra to understand population growth rate*, peer reviewed education materials for mathematics and ecology developed for the Capital University National Science Foundation grant (DUE 9952806): *Computational science across the curriculum.* Subcontract amount: $2,000. Award period March-December, 2011.

- Ludwig, Lewis D., *Discrete vs. continuous population models*, peer reviewed mathematical education materials developed for the Capital University National Science Foundation grant (DUE 9952806): *Computational science across the curriculum.* Subcontract amount: $5,000. Award period July-December, 2010.

- Ludwig, Lewis D., *Technically Speaking*, article for Resources for Undergraduate Research, December, 2010, MAA.org.

- *Technically speaking: Resource DVD*, a series of video vignettes that portrayed student-actors presenting a small portion of a mathematical talk, roughly 30-90 seconds in length. In each set of vignettes, the student would give two ways to present an idea: one with shortcomings, the second correcting these shortcomings. The main goal of the project was to improve the oral communication skills of undergraduate mathematics and related STEM (Science, Technology, Engineering, and Mathematics) students. Fully funded by the National Science Foundation Course, Curriculum and Laboratory Improvement grant (ID 0632804). Distributed 450 copies of the DVD to math departments and programs on three continents. Companion website at techspeaking.denison.edu, January, 2009.

- Havill, Jessen; Ludwig, Lewis D., *Technically speaking: Fostering the communication skills of computer science and mathematics students*, Proceedings of the Thirty-Eighth SIGCSE technical symposium on computer science education, 185–189, 2007.

- Ludwig, Lewis D., *On the path to scholarship*, Proceedings of the Conference on Promoting Undergraduate Research in Mathematics, American Mathematical Society, Providence, RI, 2006.

- Ludwig, Lewis D., *Instructor Resources* for *Why knot?*, Key Curriculum Press, web-based materials, June, 2006.

- Adams, Colin; Ludwig, Lewis D., *Math Talk*, Mathematical Intelligencer **27** (2005), no. 3, 31–32.

- Howard, Keith; Ludwig, Lewis D. , *Hands-on learning in calculus via Maplets-based projects*, The Proceedings of the Sixteenth Annual International Conference on Technology in Collegiate Mathematics, 2003.

Student Publications

- Hughes, Colleen, *Linked triangles in straight edge embeddings of* K_6, Pi Mu Epsilon Journal, **12** (2006), no. 4, 213–218. Winner of The 2006 Richard V. Andree Award for best student article published in 2006.

Invited Research Presentations

- *Knot mosaics – recent results*, invited presentation in the special session "Knot theory and its applications" at the American Mathematical Society Sectional Meeting at University of North Carolina - Greensboro, November, 2014.

- *Knot mosaics: results and open questions*, Invited Paper Session: Open and Accessible Problems in Knot Theory, 2013 MathFest, Hartford, CT, August, 2013.

- *The mosaic number of an infinite family of knots*, 2013 Research Experience for Undergraduates Program Colloquium, California State University - Fresno, fully funded by the Fresno REU, June, 2013.

- *An introduction to knot mosaics: results and open questions*, 2013 Willamette Valley Research Experience for Undergraduates and Research Experience for Teachers Program Colloquium, Lewis and Clark College, fully funded by the Willamette Valley REU/RET, July, 2013.

- *Knot mosaics: the mosaic numbers of an infinite family*, invited presentation at the conference on the Topology of Spatial Graphs at Loyola Marymount University, Los Angeles, CA, fully funded by the NSF, June, 2013.

- *Knot mosaics*, UnKnot Conference, Denison University, Granville, OH, July, 2012.

- *Outlets for undergraduate research*, invited presentation at *2012 Trends in Undergraduate Research in Mathematical Sciences (TURMS)*, an invitation only event of the leading practitioners in undergraduate research in mathematical sciences, fully funded by the National Science Foundation and the National Security Agency, Chicago, IL, October, 2012.

- *When topology meets chemistry*, presentation of a chapter of our manuscript developed at Park City Math Institute, fully funded by the NSF, July, 2011.

- *Knot mosaics: results and open questions*, 2011 Research Experience for Undergraduates Program Colloquium, Brigham Young University, fully funded by the BYU REU, July, 2011.

- *Intrinsic linking and knotting in straight-edge embeddings of complete graphs*, International Workshop on Spatial Graphs 2010, Waseda University, Tokyo, Japan, fully funded by Japan Society for the Promotion of Science, August, 2010.

- *Straight talk about knots: How one question led to a four year research project*, 2010 Research Experience for Undergraduates Program Colloquium, Brigham Young University, fully funded by the BYU REU, July, 2010.

- *Links and knots in complete graphs with linear edges*, Invited Paper Session: Open and Accessible Problems in Knot Theory, 2009 MathFest, August, 2009.

- *Links and Knots in Straight-edge Spatial Graphs*, UnKnot Conference, Denison University, Granville, OH, July, 2009.

- *Links and knots in straight-edge embeddings*, 2008 Research Experience for Undergraduates Program Colloquium, SUNY-Potsdam, fully funded by the SUNY-Potsdam REU, June, 2008.

- *Links and stick knots*, 2007 Research Experience for Undergraduates Program Colloquium, James Madison University, fully supported by the JMU REU, June, 2007.

- *Linking in straight-edge embeddings of* K_7, New York City Colleges Topology Seminar, College of Staten Island, December, 2006.

- σ*–wHCP Spaces*, New York City Colleges Topology Seminar, University of Connecticut - Stamford, December, 2004.

- *Knot theory, graph theory, and their link* two-part presentation with Colleen Hughes ('06), 32nd Annual Fall Mathematics Conference at Miami University, October, 2004.

- *Current Progress on* κ*-Fréchet Urysohn Spaces*, New York City Colleges Topology Seminar, College of Staten Island, December, 2003.

- *Recent progress in* α*-type separation axioms and a new type of convergence*, Brooklyn Topology Conference, Brooklyn College, June, 2003.

- *A Katětov-type result via* β*-normality*, presented at the Nogura Topology Mini-Conference, Slippery Rock University, March, 2002.

Student Research Awards

- Erica Evans '11, summer 2010, presented our findings at the national 2010 MathFest meeting in Pittsburgh, PA, and was 1 of 10 students to win an award ($150) for best presentation and result from 58 presentations at the Pi Mu Epsilon student session.

- Joe Paat '11, summer 2010, presented our findings at the national 2010 MathFest meeting in Pittsburgh, PA, and was 1 of 10 students to win an award ($150) for best presentation and result from 58 presentations at the Pi Mu Epsilon student session.

- Jacob Shapiro '10, summer 2010, presented our findings at the national 2010 MathFest meeting in Pittsburgh, PA, and was 1 of 20 students to win an award ($100) for best presentation and result from 150 presentations at the MAA student session.

- Joe Paat '11 and Jacob Shapiro '10, summer 2009, presented our findings at the 2010 JMM Undergraduate Poster Session in San Francisco and were 2 of 33 students to win an award ($100) for best presentation and result from over 180 other poster presentations.

- Sam Behrend '09, summer 2008, presented our findings at the national 2008 MathFest meeting in Madison, WI, and was 1 of 8 students to win an award ($150) for best presentation and result from 48 presentations at the Pi Mu Epsilon student session. Sam also was one of 33 students from 206 chosen for a similar award at the 2009 JMM Undergraduate Poster session in Washington, DC.

- Rachel Grotheer '08, summer 2007, presented our findings at the national 2007 MathFest meeting in San Jose and was 1 of 12 students to win an award ($150) for best presentation and result from 75 presentations at the Pi Mu Epsilon student session. Rachel also was one of 34 students from 185 chosen for a similar award ($100) at the 2008 JMM Undergraduate Poster session in San Diego.

- Colleen Hughes '06, summer 2004, presented our work at two national conferences, the 2004 MathFest in Providence and the 2005 Joint Mathematical Meetings in Atlanta winning an award for quality of presentation and result at each ($150 and $100 respectively). Colleen published this work in the Journal of Pi Mu Epsilon in 2006 and won the 2006 Richard V. Andree Award for best student article published in 2006 ($300).

Contributed Research Presentations

- *Biology, and chemistry, and physics! Oh, my (topology)!*, Denison Scientific Association, November, 2011.

- *Linking in straight-edge embeddings of complete graphs*, Graph Theory and Applications session, MathFest, San Jose, CA, August, 2007.
- *Links and stick knots revisited*, 2007 Math Colloquium, Manhattan College, November, 2007.
- *When graph theory meets knot theory*, Communicating Mathematics, University of Minnesota - Duluth, July, 2007.
- *Knot theory*, Five Colleges Speaker Circuit, Kenyon College, October, 2006.
- *Untangling Knot Theory*, FASt Talk Colloquim, Denison University, September, 2006.
- *Dowker spaces revisited*, 10th Prague topological symposium, Czech Republic, August, 2006.
- *Recent progress on σ–wHCP spaces* , 2005 Spring Topology and Dynamical Systems Conference, Berry College, GA, March, 2005.
- *Nagata-Smirnov revisited: Spaces with σ-weakly hereditarily closure preserving bases*, 19th Summer Conference on Topology and Its Applications, University of Cape Town, South Africa, July, 2004.
- *Recent progress in the study of κ-Fréchet Urysohn Spaces*, 2003 Summer Conference on Topology and Its Applications, Howard University, July, 2003.
- *On κ-Fréchet-Urysohn spaces*, presented at the 2002 Zoltan Balough Memorial Conference at Miami University, 2002.
- *A strengthening of a result by A.H. Stone and its application to infinite products*, 2002 AMS/MAA National Meetings, San Diego, CA, 2002.
- *Applications of α-normal and β-normal*, presented at the 15th Summer Conference on General Topology and Its Applications, Oxford, Ohio, July, 2000.
- *Results on α-normal and β-normal*, presented at the Spring General Topology and Dynamic Systems Conference, San Antonio, Texas, March, 2000.

Contracted Workshops/Major Presentations

- *Mathematical research... it's not what you think!*, contracted presentation/activity for undergraduate students attending 2014 MathFest, Portland, OR, partially under by the Mathematical Association of America, August, 2014.

- *Technically Speaking: preparing students to communicate technical information in a non-technical world*, invited workshop presenter for the Mathematical Association of America and Project NExT, Madison, WI. Fully funded by the MAA with stipend, August, 2012.

- *Mathematical research... it's knot what you think!*, contracted to develop hands-on activity in knot theory for the American Mathematical Society and present at the two-day USA Science and Engineering Festival in Washington, D.C. which drew over 150,000 attendees. Secured funding to include four Denison students: Nathan Zakahi ('12), Holly Wilson ('13), Janie Frandsen ('14), and Paul Yang ('15). Fully funded by the AMS with stipend, April, 2012.

- *Preparing students to communicate mathematics*, organized and presented a two-day mini-course with Michael Orrison, Harvey Mudd College, with 22 attendees, 2009 MathFest. Fully funded by the MAA with stipend, August, 2009.

Conferences Organized

- *2014 Spring Ohio MAA and the Great Lakes SIAM Sectional Meeting*, program chair for 2-day event held at the University of Toledo with nearly 130 attendees. Developed and organized program that included four national keynote speakers, and over 40 contributed talks. April, 2014.

- *2013 Fall Ohio MAA Sectional Meeting*, program chair for 2-day event held at Cleveland State University with nearly 100 attendees. Developed and organized program that included four national keynote speakers, and over 30 contributed talks. October, 2013.

- *2012 Spring Ohio MAA Sectional Meeting*, lead local-organizer for 2-day event held at Denison with over 200 attendees, five national keynote speakers, and over 40 contributed talks, mostly by undergraduates. April, 2013.

- *2012 Undergraduate Knot Theory Conference*, July 15-18, 2012 lead organizer and host. A 4-day national conference with 99 registrants ranging from undergraduates, graduate students, and undergraduate faculty.

- *Undergraduate Knot Theory Conference*, July 15-17, 2009 lead organizer and host. A 3-day national conference with over 110 participants ranging from undergraduates, graduate students, and undergraduate faculty, to leading researchers in the field. Over 50 scholarly presentations were delivered. In addition, organized the 2009 MAA *Summer Workshop on Knot Theory* presented by Colin Adams of Williams College.

- *20^{th} Summer Conference on Topology and Its Applications* July 10-13, 2005 and the *Special Workshop on Computational Topology* lead organizer and host. A 5-day international conference with over 170 participants and 115 scholarly presentations from five distinct areas of General Topology: Topology and Set Theory, Topological Groups and Semigroups, Topology in Functional Analysis, Topology in Computer Science, Topology in Dynamical Systems, and Computational Topology.

- *Denison Topology Conference* organized and hosted, February 21-22, 2003. Eighteen individuals from ten institutions attended. The keynote speaker, A.V. Arhangel'skii of Ohio University, gave a two-part seminar on "Around Lindelöf Property." Other invited speakers included Dennis Burke of Miami University, Todd Eisworth of the University of Northern Iowa, and Paul Gartside of the University of Pittsburgh. Five contributed talks were given.

Workshops Attended

- *Minicourse: A Beginner's Guide to the Scholarship of Teaching and Learning in Mathematics*, an introduction into conducting projects in the scholarship of teaching and learning (SoTL) in mathematics, 2014 MathFest, Portland, OR, August, 2014.

- 2011 PCMI (Park City Math Institute) 3 week workshop on moduli spaces of Riemann surfaces organized by the Institute for Advanced Study at Princeton with partial funding from the NSF held in Park City, Utah. Worked with a national team of mathematicians to develop an undergraduate text on topology to be published by the American Mathematical Society.

- 2006 PCMI (Park City Math Institute) 3 week workshop on low dimensional topology organized by the Institute for Advanced Study with partial funding from the NSF held in Park City, Utah.

- 2004 Ohio PREP (Professional Enhancement Program) workshop on knot theory at Ohio Northern University with partial funding from the NSF, 3 day workshop.

- 2003 National PREP workshop on knot theory at Wake Forest University with partial funding from the NSF, 5 day workshop.

Invited Pedagogical Presentations

- *Reconsidering Hilbert's list, with a pedagogical twist*, invited address for Ohio Section Teaching Award recipient, 2014 Fall Section Meeting of the Ohio MAA, Wittenburg University, October, 2014.

- *How to give a good talk* for the University of Minnesota - Duluth Research Experience for Undergraduates, partially funded by the Duluth REU, Duluth, MN, July, 2014.

- *The over-easy classroom*, invited panelist/presenter for the MAA Committee on the Teaching of Undergraduate Mathematics Panel Discussion Maximizing your impact in the classroom: Case studies in best practices for classroom teaching, 2014 Joint Mathematical Meetings, Baltimore, MD, January, 2014.

- *Developing the life skill of thinking mathematically*, invited paper session Offering Students Lessons Beyond Mathematics, Through Mathematics, 2011 MathFest, Lexington, KY, August, 2011.

- *Developing students mathematical (oral) language skills*, invited panel presentation for Project NExT, 2011 Joint Mathematical Meetings, New Orleans, LA, January, 2011.

- *How to present technical information to a general audience*, invited address to the 2010 Research Experience for Undergraduates Program Colloquium, Brigham Young University, fully funded with stipend, July, 2010.

- *Preparing students to communicate mathematics*, organized and presented during 80-minute panel discussions supported by the MAA CUPM Subcommittee on Research by Undergraduates - Project NExT Panel Discussion, with Joseph A. Gallian, University of Minnesota – Duluth, Darren Naryan, RIT, and Michael Orrison, Harvey Mudd College, Joint Mathematics Meetings, Washington D.C., January, 2009.

- *Report on technically speaking CCLI project*, poster presentation, Inventions and Impact 2: Building Excellence in Undergraduate Science, Technology, Engineering, and Mathematics (STEM) Education, a conference of Course, Curriculum, and Laboratory Improvement (CCLI) Program National Science Foundation, Division of Undergraduate Education, Joint Mathematics Meetings, Washington D.C., January, 2009.

- *Technology in the classroom*, invited presentation for Teaching Matters, Denison University, October, 2008.

- *Report on technically speaking CCLI project*, NSF CCLI poster session, Joint Mathematics Meetings, San Diego, CA, January, 2008.

- *Technically speaking: Fostering the communication skills of computer science and mathematics students*, with Jessen Havill, Thirty-Eighth SIGCSE technical symposium on computer science education, Covington, KY, March 2007.

- *Speaking of Mathematics*, 80-minute special MAA panel co-organized with John Jacobsen of Harvey Mudd College, with speaker Joseph A. Gallian of the University of Minnesota - Duluth at the AMS/MAA National Meetings, Atlanta, GA, January, 2005.

- *Discovery Learning - The Modified Moore Method*, invited talk for the Ohio Project NExT, presented at the 2002 Spring MAA Ohio Section at Xavier University, April, 2002.

Contributed Pedagogical Presentations

- *The Over-easy Classroom*, contributed presentation at the 2014 MathFest, Portland, OR, August, 2014.

- *Test Tuesday*, contributed presentation for the session on Active Learning at the 2014 MathFest, Portland, OR, August, 2014.

- *S*TEM LLC: Lessons from a First-Year Learning Community with Kim Specht, presenting our findings from our two-year STEM-LLC pilot learning community, Denison Scientific Association, April, 2014.

- *The art of mathematical thinking*, session on First Year Study Courses, 2010 MathFest Pittsburgh, PA, Capital University, August, 2010.

- *Preparing students to orally communicate technical information*, session on Effective Practices for Teaching Mathematical Communication Skills, 2010 MathFest Pittsburgh, PA, Capital University, August, 2010.

- *Preparing students in the art of oral communication*, 2008 Fall Ohio MAA Section Meeting, Capital University, October, 2008.

- *Technically speaking: fostering the communication skills of CS and Math students*, 2007 Fall Ohio MAA Section Meeting, Wittenberg University, October, 2007.

- *Fostering the communication skills of mathematics students*, 2007 MathFest, San Jose, CA, August, 2007.

- *Untangling Knot Theory*, FASt Talk Colloquium, Denison University, September, 2006.

- *Evolution of Math 210*, Denison Scientific Association, February, 2006.
- *Summer research at Denison*, invited talk for the Ohio Project NExT session, University of Miami, April, 2005.
- *Entering the community of scholars: Summer research at Denison University*, special session on Initiating and Sustaining Undergraduate Research Projects and Programs, AMS/MAA National Meetings, Atlanta, GA, January, 2005.
- *Complete Graphs – Finding the Link*, Five Colleges Speaker Circuit, College of Wooster, December, 2004.
- *Why not? An introduction to knot theory and its applications to biology and chemistry*, Chowder Hour, Denison University, September, 2004.
- *When topology meets chemistry*, Denison Scientific Association, April, 2004.
- *Check digits and error correction*, Special Session on Mathematical Applications in Computer Science, AMS/MAA National Meetings, Phoenix, January, 2004.
- *Computer Visualizations for Calculus*, AMS/MAA National Meetings, Phoenix, January, 2004.
- *Hands-on Learning in Calculus via Maplets-based Projects*, The Sixteenth Annual International Conference on Technology in Collegiate Mathematics, Chicago, IL, October, 2003.
- *How big is infinity?*, Faculty Lunch Series, Denison University, September, 2003.
- *Why should I give a doughnut about point-set topology?*, Oberlin College, March, 2003.
- *Understanding the fundamental theorem of calculus through writing*, AMS/MAA National Meetings, Baltimore, January, 2003.
- *Hands-on learning in calculus via computer-based projects*, Fall MAA Ohio Section, Kent State University – Trumbull, October, 2002.
- *A Real World Application of the Area Under the Curve*, MAA MathFest, Burlington, Vermont, August, 2002.

Grants

- Principal Investigator for 2012 *National Science Foundation*, $33,520 award with Colin Adams of Williams College to host the *Undergraduate Knot Theory Conference* at Denison University in July, 2012.

- Principal Investigator for 2009 *National Science Foundation*, $28,000 award with Colin Adams of Williams College to host the *Undergraduate Knot Theory Conference* at Denison University in July, 2009.

- Principal Investigator for 2007 *National Science Foundation: Course, Curriculum, and Laboratory Improvement Grant*, $72,746 for the project *Technically Speaking* to develop a series of instructional video vignettes which are freely available on the web. This project is rooted in the experiences of the oral communication component of the Math 210 Introduction to Proofs course at Denison.

- 2007 *Mellon Cluster Award: Inter-Institutional Initiatives*, $45,000 with colleagues from Furman University, Harvey Mudd College, and Vassar College to host the *The Art and Science of Teaching Mathematics*. A three day conference held at Harvey Mudd with over 30 participants from the cluster schools.

- 2006 *Mellon Faculty Career Enhancement Program*, $3,378 for travel and housing to work with Colin Adams at Williams College for the month of January during junior leave.

- Principal Investigator for 2005 *National Science Foundation*, $13,825 award with Joan Krone to host the *20th Summer Conference on Topology and Its Applications* at Denison University in July, 2005.

- 2004 *Mellon Faculty Career Enhancement Program*, $5,000 award with Joan Krone to participate in the Midland Graduate School Spring Applied Semantics II Workshop in Nottingham, England.

- 2003 *Hands-on Learning in Calculus via Web-based Applets*, funded by the Collaboration with Technology Grant funded by the Mellon Foundation, $8,000. Co-PI with Keith Howard of Kenyon College. Employed a student worker from Kenyon College and one from Denison University. Expanded on previous Mellon work and developed Maplets for the web.

- 2002 *Hands-on Learning in Calculus via Computer-based Projects*, funded by the Collaboration with Technology Grant from the Mellon Foundation, $15,000. Collaborative effort with Judy Holdener and Keith Howard of Kenyon College and Zaven Karian of Denison University to develop hands-on Maple labs for the calculus sequence.

Teaching

Precalculus
Calculus I, II, III
Probability and Statistics
Computer Science I (C++)
Introduction to Proofs
Real Analysis
Advanced Mathematical Topics: Knot Theory
Elementary Topics for Math Education
Art of Mathematical Thinking
(Honors and First Year Study)
Probability and Statistics for Math Education
Discrete Mathematics
Linear Algebra and Differential Equations
Mathematical Methods for the Social and Natural Sciences

Teaching Awards

- *Nancy Eshelman Brickman Endowed Professor*, named chair of the faculty at Denison University.
- *Distinguished Teaching Award*, the Ohio Section of the Mathematical Association of America.
- ExxonMobil Project NExT Fellow 2001
- University College Graduate Associate Outstanding Teaching Award 2000, Ohio University
- Outstanding Teaching Assistant, Ohio University 1998
- Outstanding Teaching Assistant, Miami University 1996

Leadership in the Mathematical Community

- Ohio MAA Programming Committee chair, 2013-2014.
- Reviewer for the American Mathematical Society MathSciNet, the leading mathematical research database in the US.
- Reviewer for Zentralblatt MATH, the most comprehensive reviewing service in mathematics, which provides reviews of peer-reviewed published articles and books in all fields of mathematics.
- External evaluator for two tenure cases and two cases of promotion: Goucher College, Washington and Jefferson College, and Willamette College.
- External reviewer for the Mathematics Department at Marietta College, April, 2010.
- National MAA Committee member on Teaching of Undergraduate Mathematics, 2009-present.

- National counselor in mathematics and computer science for the Council for Undergraduate Research, 2007-present.
- Ohio MAA Programming Committee member, 2011-2013.
- Reviewer, Posters on the Hill for the Council on Undergraduate Research, 2009-2011.
- Ohio MAA Committee chair on Section Activities, 2007-2011.
- Reviewer, NSF CCLI proposals Phase I 2008, CCLI proposals Phase II 2009, and S-STEM 2010.
- Referee for research journal Topology and Its Applications, 2004, 2005, 2008.
- Guest editor for *Topology Proceedings* **30** (2006), no. 2 which contains 16 refereed research articles from 3 major categories on general Topology.
- Reviewer for manuscripts for Key College Publishing, 2004.
- Reviewer for manuscripts for the MAA Classroom Resource Materials, 2003, 2004, 2005.
- Referee for the Topology Proceedings, JOMA, Wiley Publishing, The Rose-Hulman Undergraduate Mathematics Journal.
- Invited judge for Undergraduate Research Poster Session, AMS/MAA National Meetings, 2002, 2003, 2004.
- Mathematical Association of America Liaison for Department of Mathematics and Computer Science at Denison University.
- *The Moore Method*, organizer and facilitator of panel discussion, Project NExT, MathFest, Burlington, VT, August 2002.

Leadership in the Department and Student Activities

- Research Students:

Amanda Peiffer	2014	Rachel Grotheer (H,P,A)	2007
Chen Gary Wu	2012	Matt Steinke (H)	2007
Erica Evans (A,P)	2010	Pam Arbisi (H,P)	2006
Joe Paat (A,P)	2009, 2010	Evan Star	2006
Jacob Shapiro (A)	2009	Colleen Hughes (H,P,A)	2004
Sam Behrend (H,A)	2008		

Table 1: H: Honors Thesis, P:Publication, A: Award

- Faculty sponsor (with Matt Neal) for five students who attended the 2014 Spring MAA Section meeting, University of Toledo, April, 2014. All five students gave 15 minute presentations on work developed in my Math 215 course.

- Coordinated and secured funding for four students to attend the USA Science and Engineering Festival and represent the American Mathematical Association's *Mathematical research ... it's knot what you think!* in Washington, D.C., April, 2012.

- Faculty sponsor (with Matt Neal) for 10 students who attended the 2010 MAA MathFest, Pittsburgh, PA, August 2010. Nine of these students gave 15 minute presentations in the student session, five won national awards for their work.

- Faculty sponsor for 3 students who attended the 2010 Spring MAA Ohio Section meeting, Kent State University, March 2010. Each of these students gave 15 minute presentations in the student session.

- Faculty sponsor for students who attended the 2009 Spring MAA Ohio Section meeting, Bowling Green State University, March 2009. Three of these students gave 15 minute presentations in the student session and all competed in the student competition.

- Faculty sponsor for 17 students who attended the Fall Mathematics (2008) Conference at Miami University, Oxford 2008. Three of these students gave 15 minute presentations.

- Faculty sponsor for 12 students who attended the 2008 Spring MAA Ohio Section meeting, Marietta College, March 2008. Three of these students gave 15 minute presentations in the student session and 9 competed in the student competition.

- Faculty sponsor for 7 students who attended the 2007 Spring MAA Ohio Section meeting, Shawnee State University, March 2007. Three of these students gave 15 minute presentations in the student session and all competed in the student competition.
- Faculty sponsor for five students attending the Nebraska Conference for Undergraduate Women in Mathematics. Three of these students gave 15 minute presentations on their summer research.
- Developed and organized biweekly FASt Talks series (Faculty And Student Talks), fall 2003- fall 2005.
- Developed, edited, and published bi-semester editions of the *Logical Times*, the newsletter for the department, 2003-2005.
- Faculty sponsor (with K. Hutson and J. Havill) for 19 students who attended the 32^{nd} Fall Mathematics (2005) Conference at Miami University, Oxford. Three of these students gave 20 minute presentations at the $\pi\mu\epsilon$ Student Session.
- Faculty sponsor (with K. Hutson and M. Neal) for 11 students attending the 2005 Spring MAA Ohio Section, Miami University, March 2005. Nine of these students gave 15 minute presentations in the student session.
- Faculty sponsor (with T. Feil, K. Hutson, and M. Neal) for 21 students attending the 32^{nd} Fall Mathematics (2004) Conference at Miami University, Oxford. Three of these students gave 20 minute presentations at the $\pi\mu\epsilon$ Student Session.
- Organized and hosted speaker Ralph Kopperman of City College of New York, *Digital topology*, 2003.
- Faculty sponsor (with M. Neal) for eleven students attending the 2004 Spring MAA Ohio Section, University of Cincinnati, March, 2004. Eight of these students gave 15 minute presentations in the student session.
- Faculty sponsor for presentations by Elizabeth Ehret '04 and Anthony Fressola '04 at the Special Session on Undergraduate Research at the 2004 AMS/MAA National Meetings, Phoenix, AZ, January, 2004.
- Faculty sponsor (with K. Hutson and M. Neal) for 15 who attended the 31^{st} Fall Mathematics Conference (2003) at Miami University, Oxford. 2 of these students gave 20 minute presentations at the $\pi\mu\epsilon$ Student Session.
- Faculty sponsor (with M. Neal) for 15 students who attended the 2003 Spring MAA Ohio Section, Ohio State University, April, 2003. Faculty sponsor for student presentation, *Topological Logics*, by Anthony Fressola.
- Co-author of Mathematics Proficiency Test (with M. Neal) used since June 2003 Orientation for incoming students.

- Faculty sponsor for poster presentation by Anthony Fressola '04 and Stoyan Paunov '04, Undergraduate Student Poster Session at the 2003 AMS/MAA National Meetings, Baltimore, MD, January, 2003.

Leadership at Denison

- Advisory committee member for Denison Faculty Fellow, 2014-present.

- Chair for the strategic planning engagement group 10: How do we support underprepared students?, spring, 2014.

- Organized and hosted Convocation Speaker Francis Su of Harvey Mudd College, *My Favorite Math Fun Facts*, in conduction with my 200-level math courses, March, 2014.

- Member of the Academic Affairs Council, 2013-present.

- Science writing workshop presenter/facilitator with Geoff Smith, two-day workshop for Denison science faculty to help incorporate writing into the science curriculum, summer, 2013.

- GLCA Academic Leadership and Innovation (GALI) Institute participant, one of three Denison faculty members chosen to attend a leadership workshop presented by the GLCA, fully funded, November, 2013.

- Denison representative to the workshop *Mentoring a New Generation of Colleagues – Challenges, Prospects, Best Practices* hosted by the AALAC at Carleton College, fully funded, June, 2012.

- Denison representative to the *Building a network for the excellence in STEM teacher education at liberal arts institutions* conference hosted by the Consortium for Excellence in Teacher Education, at Bryn Mawr College, fully funded by the NSF, May, 2012.

- Teaching and Learning Center Committee, sponsored by the Provost's Office the committee was charged with providing: (1) an articulation of the needs addressed by a Teaching and Learning Center; (2) an indication of the specific activities and services to be offered, based on best practices; (3) an action plan to constitute the center and its activities and services; (4) a strategy for communicating the relevance and importance of the center across the faculty; and (5) a means of assessing the effectiveness of the center's activities and services. Final report delivered in April, 2012.

- Coordinator/organizer for semester-long faculty reading group on *How Learning Works* by Ambrose et al., spring, 2012.

- Lead organizer and coordinator for visit by Michael Reder, the Director of Connecticut College's Joy Shechtman Mankoff Faculty Center for Teaching and Learning, for a 3-day visit (November 7-9, 2011) designed to (1) assess Denison's current work supporting teaching and learning; (2) engage Denison faculty in conversations about what a more comprehensive teaching and learning program might include; and (3) help the committee move forward with its work of defining Denison's needs and Teaching and Learning Center models.

- Teaching Matters committee member and organizer, 2008-present.

- Faculty representative for Academic Affairs committee of the Board of Trustees dinner, 2011.

- Science presentation to perspective students, October, 2011.

- Table leader for 2011 Fall Faculty Conference, Strategies for successful transitions.

- New faculty orientation presenter, 2011.

- Grants 102 presenter for DSA, 2011.

- Denison faculty representative to Licking Valley High School teacher in-service day, 2011.

- Oral Communication Coordinator, 2009-2011.

- Faculty representative for Board of Trustees dinner, 2010.

- Organized and hosted Convocation Speaker Michael Starbird of the University of Texas – Austin, *The fourth dimension*, in connection with my FYS 102 course, February 2010.

- FYS writing workshop participant, 2009.

- Liberal arts workshop participant, 2009.

- Table leader for 2009 Fall Faculty Conference, Grading: Alphabet soup or strategic choice?

- Organized and hosted Convocation Speaker Colin Adams of Williams College, *Blown away: What knot to do when sailing*, March 2008.
- Table leader for 2007 Fall Faculty Conference with Barbara Tewksbury.
- Member of 2007 Howard Hughes Medical Foundation grant committee.
- Presentation *Technically Speaking* for alumnus Skip N. Hansford per the request of Jon Bridge and Scott Siddall, April, 2007.
- Organized and hosted Convocation Speaker George Hart of Stony Brooke University, *Geometric Sculptures*, April, 2007.
- Entrepreneurial Stipend Selection Committee, Career Services, 2004-2007.
- Invited faculty speaker for 2005, 2007 Paving the Way Pre-Orientation.
- Organized and hosted Convocation Speaker George Hart of SUNY – Stony Brook, *Math and sculptures*, April, 2007.
- Member of University Council, fall, 2005.
- Finance Committee, member fall 2004-spring 2006, chair fall 2006-spring 2007.
- Organized and hosted national speaker Joseph A. Gallian of University of Minnesota - Duluth, *How to present your research*, 2003, especially geared for the science faculty.
- June Orientation Advisor, 2003–2008, 2010-2-14, August Orientation Advisor, 2004, 2007.
- New Faculty Orientation invited speaker, 2004, 2012.
- Select Scholars Overnight Program, faculty focus speaker, 2004, 2006.
- Organized and hosted Convocation Speaker Edward Burger of Williams College, *Magic with Mathematics: Is the Formula Quicker than the Eye?*, February 2003.
- Science Open House, workshop speaker, 2002.

Employment

- **Denison University** Granville, Ohio
  Associate Professor September 2008 – present
- **Denison University** Granville, Ohio
  Assistant Professor September 2002 – 2008

- **Kenyon College** Gambier, Ohio
  Visiting Assistant Professor August 2001 – May 2002

- **Miami University** Oxford, Ohio
  Visiting Professor August 2000 – May 2001

- **Ohio University** Athens, Ohio
  Graduate Teaching Fellow September 1996 – July 2000
  Mathematics Library Coordinator September 1998 – July 2000

- **Project SUSTAIN** Athens, Ohio
  Administrative Assistant/Advisory Team Member June 1999 – July 2000

- **North College Hill High School** Cincinnati, Ohio
  Mathematics Teacher August 1995 – June 1996

- **Miami University** Oxford, Ohio
  Graduate Teaching Assistant August 1993 – May 1995

- **College of Mount St. Joseph** Cincinnati, Ohio
  Adjunct Instructor, Mathematics Department May – August 1996
  Adjunct Instructor, Business Department January – May 1993
  Director of Peer Tutoring May 1991 – June 1992