

# LARA K. PUDWELL

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<http://faculty.valpo.edu/lpudwell>

## EDUCATION

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Ph.D. in Mathematics, Rutgers University May 2008  
Thesis Title: Enumeration Schemes for Pattern-Avoiding Words and Permutations  
Advisor: Dr. Doron Zeilberger

B.S. in Mathematics, Valparaiso University May 2003  
summa cum laude

B.A. in Computer Science, Valparaiso University May 2003  
Minor in Humanities  
summa cum laude

## WORK EXPERIENCE

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Full Professor, Valparaiso University (Valparaiso, IN) 2021 –  
Associate Professor, Valparaiso University (Valparaiso, IN) 2014 – 2021  
Assistant Professor, Valparaiso University (Valparaiso, IN) 2008 – 2014

- 2024-2028 Dixon W. and Herta E. Benz Professorship
- 2013-2014 University Research Professor
- 2011-2019 Valparaiso Experience in Research by Undergraduate Mathematicians program director

Executive Director,  
MathPath 2021 – present

Graduate Assistant, TA Project,  
Rutgers University (New Brunswick, NJ) 2007 – 2008

Teaching Assistant, Department of Mathematics,  
Rutgers University (Piscataway, NJ) 2005 – 2008

Research Experience for Undergraduates Coordinator, DIMACS,  
Rutgers University (Piscataway, NJ) 2005 – 2007

## AWARDS AND HONORS

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### External

- Indiana Section Award for Distinguished College or University Teaching of Mathematics, 2024
- Trevor Evans Award (for authoring an exceptional article that is accessible to undergraduates in *Math Horizons*), 2023
- Woman of Distinction recognition from Alpha Epsilon (Indiana) State of Delta Kappa Gamma (International Honor Society for Key Women Educators), 2017
- Henry L. Alder Award for Distinguished Teaching by a Beginning College or University Mathematics Faculty Member, 2014
- Council on Undergraduate Research Math Faculty Mentor Award, 2013
- Delta Kappa Gamma (Honor Society for Women Educators), inducted April 2013
- Project NExT Fellow, 2008–2009
- National PEO (Philanthropic Educational Organization) Scholar Award Recipient, 2006–2007
- National Science Foundation Graduate Research Fellowship Honorable Mention, 2004

### Internal

- Dixon W. and Herta E. Benz Professorship, 2024–2028
- Pi Mu Epsilon national honorary mathematics society, inducted as a charter member into Valparaiso's Indiana Theta chapter, April 2023
- Valparaiso University Excellence in Research and Creative Work Award, 2022–2023
- Valparaiso University Excellence in Teaching Award, 2021–2022
- Phi Beta Kappa, inducted as an alumna member into Valparaiso's Eta of Indiana chapter, May 2019
- Award for Significant Impact on a Fraternity Member, (from Sigma Phi Epsilon 2018)
- Order of Omega honor society, inducted honoris causa into Valparaiso's Gamma Mu chapter, November 2016
- Mark R. Schwehn Outstanding Faculty Advisor Award, 2014–2015
- Award for Outstanding Support of Fraternity and Sorority Life, (from Phi Delta Theta 2014, 2015)
- Valparaiso University Research Professorship, 2013–2014
- Rutgers School of Arts and Sciences Award for Distinguished Contributions to Undergraduate Education as a Teaching Assistant, 2007
- Rutgers Carnegie Academy for the Scholarship of Teaching and Learning Fellow, 2007–2008
- TA Teaching Excellence Award, Rutgers University, Spring 2006
- Torrey Graduate Fellowship, Rutgers University, 2003–2005

## GRANTS

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• Permutation Patterns 2021 Conference Grant (NSA)	\$10,140
• NSF-AWM Travel Grant, 2019	\$3,290
• Permutation Patterns 2019–2021 Conference Grant (NSF)	\$30,000
• Permutation Patterns 2018 Conference Grant (NSA)	\$9,996
• Permutation Patterns 2018 Conference Grant (NSF)	\$15,000
• CELT Travel grant (internal grant for teaching-related travel), 2017	\$1,000
• Permutation Patterns 2017 Conference Grant (NSF)	\$17,000
• Valparaiso Experience in Research by Undergraduate Mathematicians (with co-PI Alex Capaldi, 2017–2019)	\$324,999
• NSF-AWM Travel Grant, 2015	\$2,268
• Permutation Patterns 2013 Conference Grant (NSA)	\$22,625
• Permutation Patterns 2013 Conference Grant (NSF)	\$22,625
• Valparaiso Experience in Research by Undergraduate Mathematicians (with co-PI Zsuzsanna Szaniszlo, 2013–2015)	\$279,586
• Valparaiso University Research Professorship, 2013–2014	\$4,000
• NSF-AWM Travel Grant, 2012	\$2,000
• Valparaiso Experience in Research by Undergraduate Mathematicians (co-PI with Rick Gillman, 2010–2012)	\$240,688
• CELT Travel grant (internal grant for teaching-related travel), 2011	\$500
• NSF-AWM Travel Grant, 2009	\$1,440

## BOOK

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1. *A Mathematician's Practical Guide to Mentoring Undergraduate Research* by Michael Dorff, Allison Henrich, and Lara Pudwell, published September 2019 by *MAA Press: an imprint of the American Mathematical Society* and the Council on Undergraduate Research.

## ESSAYS

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6. David Clark, Matt DeLong, Codi Gauger, Lara Pudwell, Julie Vega, and April Verser, MathPath: building community with middle schoolers who love math, *MAA FOCUS* Vol. 44, No. 1 (February/March 2024), p. 16–17.
5. Lara Pudwell, The Hidden and Surprising Structure of Ordered Lists, *Math Horizons* Vol. 29, No. 3 (February 2022), p. 5–7.
4. Lara Pudwell, Book Review: An Introduction to Undergraduate Research in Computational and Mathematical Biology Edited by Hannah Callender Highlander, Alex Capaldi, and Carrie Diaz Eaton; and A Project-Based Guide to Undergraduate Research in Mathematics. Edited by Pamela Harris, Erik Insko, and Aaron Wootton, *The American Mathematical Monthly*, 127.10, 953–957.
3. Lara Pudwell, Writing a Section Officers' Handbook, *MAA FOCUS* Vol. 39, No. 2 (April/May 2019), p. 28.

2. Lara Pudwell, What is an Experimental Math Course and Why Should We Care?, American Mathematical Society: On Teaching and Learning Mathematics blog (<http://blogs.ams.org/matheducation>), 23 January 2017.
1. Lara Pudwell, Adding Up the Riches of Community, *The Cresset: A review of literature, the arts, and public affairs* Advent-Christmas 2016 (Vol LXXX, No. 2, p. 53).

## REFEREED PUBLICATIONS

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(\* denotes undergraduate student)

41. Lara Pudwell, Catalan Numbers and Permutations, *Mathematics Magazine* 97.3 (2024), 279–283.
40. Ayomikun Adeniran and Lara Pudwell, Pattern avoidance in parking functions, *Enumerative Combinatorics and Applications* 3:3 (2023), Article S2R17.
39. Manda Riehl, Reed Phillips\*, Lara Pudwell, and Nate Chenette, Occurrences of reciprocal sign epistasis in single- and multi-peaked theoretical fitness landscapes, *Journal of Physics A: Mathematical and Theoretical* 55 (2022), 434002.
38. Julia Krull\*, Lara Pudwell, Eric Redmon\*, and Andrew Reimer-Berg\*, Packing patterns in symmetric words, *Australasian Journal of Combinatorics* 84.2 (2022), 238–257.
37. Jonathan Beagley and Lara Pudwell, Colorful tilings and permutations, *Journal of Integer Sequences* 24 (2021) 21.10.4.
36. Lara Pudwell, From permutation patterns to the periodic table, *Notices of the American Mathematical Society* 67.7 (2020), 994–1001.
35. Lara Pudwell and Rebecca Smith, Two-stack-sorting with pop stacks, *Australasian Journal of Combinatorics* 74.1 (2019), 179–195.
34. Michael Bukata\*, Ryan Kulwicki\*, Nicholas Lewandowski\*, Lara Pudwell, Jacob Roth\*, and Teresa Wheeland\*, Distributions of Statistics over Pattern-Avoiding Permutations, *Journal of Integer Sequences* 22 (2019) 19.2.6.
33. Monica Anderson\*, Marika Diepenbroek\*, Lara Pudwell, and Alex Stoll\*, Pattern avoidance in reverse double lists, *Discrete Mathematics and Theoretical Computer Science* 19.2 (2018), #13.
32. Lara Pudwell and Eric Rowland, Avoiding fractional powers over the natural numbers, *Electronic Journal of Combinatorics* 25.2 (2018), P2.27.
31. Michael Dorff, Allison Henrich, and Lara Pudwell, Successfully Mentoring Undergraduates in Research: A How To Guide for Mathematicians, *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 27.3 (2017), 320–336.
30. Charles Cratty\*, Samuel Erickson\*, Frehiwet Negassi\*, and Lara Pudwell, Pattern avoidance in double lists, *Involve, a Journal of Mathematics* 10.3 (2017), 379–398.
29. Lara Pudwell, Teaching the inquiry process through experimental mathematics, *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies* 27.2 (2017), 281–292.
28. David Bevan, Derek Levin\*, Peter Nugent\*, Jay Pantone, Lara Pudwell, Manda Riehl, and ML Tlachac\*, Pattern avoidance in forests of binary shrubs, *Discrete Mathematics and Theoretical Computer Science* 18.2 (2016), #8.

27. Derek Levin\*, Lara Pudwell, Manda Riehl, and Andrew Sandberg\*, Pattern avoidance in  $k$ -ary heaps, *Australasian Journal of Combinatorics* 64.1 (2016), 120–139.
26. Adam Goyt and Lara Pudwell, On packing densities of set partitions, *Australasian Journal of Combinatorics* 64.1 (2016), 64–76.
25. Lara Pudwell, Ascent sequences and the binomial convolution of Catalan numbers, *Australasian Journal of Combinatorics* 64.1 (2016), 21–43.
24. Lara Pudwell and Eric Rowland, What’s in YOUR wallet?, *The Mathematical Intelligencer* 37.4 (2015), 54–60.
23. Dennis E. Davenport, Lara K. Pudwell, Louis W. Shapiro, and Leon C. Woodson, The boundary of ordered trees, *Journal of Integer Sequences* 18 (2015) 15.5.8.
22. Andrew Baxter and Lara Pudwell, Ascent sequences avoiding pairs of patterns, *Electronic Journal of Combinatorics* 22.1 (2015), P1.58.
21. Dan Daly and Lara Pudwell, Pattern avoidance in the rook monoid, *Journal of Combinatorics* 5.4 (2014), 471–497.
20. Anant Godbole, Adam Goyt, Jennifer Herdan\*, and Lara Pudwell, Pattern avoidance in ordered set partitions, *Annals of Combinatorics* 18.3 (2014), 429–445.
19. Michael Karls, David McCune, Lara Pudwell, and Azadeh Rafizadeh, The Role of Graduate Students in Research Experience for Undergraduates Programs, *Involve, a Journal of Mathematics* 7.3 (2014), 369–372.
18. Lara Pudwell, Connor Scholten\*, Tyler Schrock\*, and Alexa Serrato\*, Non-contiguous pattern containment in binary trees, *ISRN Combinatorics* vol. 2014, Article ID 316535, 8 pages, 2014.
17. Lara Pudwell and Rachel Rockey\*, de Bruijn arrays for L-fillings, *Mathematics Magazine* 87.1 (2014), 57–60.
16. Adam Goyt, and Lara Pudwell. A Stirling Permutation Problem. (Solution II), *American Mathematical Monthly* 120.4 (2013), 369–371.
15. Michael Dairyko\*, Lara Pudwell, Samantha Tyner\*, and Casey Wynn\*, Non-contiguous pattern avoidance in binary trees, *Electronic Journal of Combinatorics* 19.3 (2012), P22.
14. Adam Goyt and Lara Pudwell, Avoiding colored partitions of two elements in the pattern sense, *Journal of Integer Sequences* 15 (2012) 12.6.2.
13. Andrew Baxter and Lara Pudwell, Enumeration schemes for vincular patterns, *Discrete Mathematics* 312 (2012), 1699–1712.
12. Nathan Gabriel\*, Katie Peske\*, Lara Pudwell, and Sam Tay\*, Pattern avoidance in ternary trees, *Journal of Integer Sequences* 15 (2012) 12.1.5.
11. Adam Goyt and Lara Pudwell, Avoiding colored partitions of lengths two and three, *Pure Mathematics and Applications* 22.2 (2011), 107–128.
10. Lara Pudwell, Stacking blocks and counting permutations, *Mathematics Magazine* 83 (2010), 297–302.
9. Lara Pudwell, Enumeration schemes for words avoiding permutations. In *Permutation Patterns* S. Linton, N. Ruskuc, and V. Vatter, Eds., vol. 376 of London Mathematical Society Lecture Note Series, Cambridge University Press, pp. 193–211. Cambridge: Cambridge University Press.

8. Lara Pudwell, Enumeration schemes for permutations avoiding barred patterns, *Electronic Journal of Combinatorics* 17.1 (2010), R29.
7. Lara Pudwell and Eric Rowland, Counting interesting elections, *American Mathematical Monthly* 117.2 (2010), 167–174.
6. Lara Pudwell, Enumeration schemes for words avoiding patterns with repeated letters, *INTEGERS: The Electronic Journal of Combinatorial Number Theory* 8 (2008), A40.
5. Lara Pudwell, Digit reversal without apology, *Mathematics Magazine* 80 (2007), 129–132.
4. Betsy Crull\*, Tammy Cundiff\*, Paul Feltman\*, Glenn Hurlbert, Lara Pudwell\*, Zsuzsanna Szaniszló, Zsolt Tuza, The cover pebbling number of graphs, *Discrete Mathematics* 296 (2005), 15–23.
3. Steven Klee\*, Lara Pudwell\*, and Rick Gillman. On the edge set of graphs of lattice paths, *International Journal of Mathematics and Mathematical Sciences* 61 (2004), 3291–3299.
2. Paul Baginski\*, Scott T. Chapman, Kathryn McDonald\*, and Lara Pudwell\*. On cross numbers of minimal zero sequences in certain cyclic groups, *Ars Combinatoria* 70 (2004), 47–60.
1. Marjorie Brewer\*, Adam Hughes\*, Lara Pudwell\*. Graphs of essentially equivalent lattice paths, *Geombinatorics* 13 (2003), 5–9.

#### KEYNOTE PRESENTATIONS

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- “Gamifying permutation patterns”; Twenty-second International Conference on Permutation Patterns; University of Idaho (Moscow, Idaho); June 13, 2024.
- “Patterns in permutations”; Eighteenth Annual Texas Undergraduate Mathematics Conference; Stephen F. Austin State University (Nacogdoches, Texas); October 28, 2023.
- “Finding Your Direction in Undergraduate Research”, Texas Section NExT presentation; Stephen F. Austin State University (Nacogdoches, Texas); October 28, 2023.
- “Patterns in Permutations”; Chan Stanek Lecture for Students, Mathfest 2023 (Tampa, Florida); August 2023.
- “Packing patterns in restricted permutations”; Southeastern International Conference on Combinatorics, Graph Theory & Computing; Florida Atlantic University (Boca Raton, Florida); March 10, 2023.
- “Patterns in Parking Functions”; Southeastern International Conference on Combinatorics, Graph Theory & Computing; Florida Atlantic University (Boca Raton, Florida); March 10, 2023.
- “Engaging students in combinatorics research”, 44th Australasian Combinatorics Conference; University of Otago, New Zealand (virtual); December 13, 2022.
- “Patterns in permutations”, UW Math Hour; University of Washington (virtual); March 20, 2022.
- “Cultivating Opportunities for Discovery”; 2021 Tennessee Mathematics Teachers Association Annual Conference; Memphis University School (Memphis, Tennessee); October 23, 2021.

- “Finding Your Direction in Undergraduate Research”, Wisconsin Section NExT Fall Conference (virtual); October 23, 2021.
- “Patterns in Permutations: the hidden and surprising structures that emerge from ordered lists”, Math Encounters presentation, National Museum of Mathematics (virtual); June 2, 2021.
- “Patterns in permutations”, Moravian Student Mathematics Conference; Moravian College (virtual); February 13, 2021.
- “Discovery, Inside and Out”; Valparaiso Symposium on Undergraduate Research and Creative Expression; Valparaiso University (Valparaiso, Indiana); May 14, 2020.
- “What’s in your wallet!?”; Math for Everyone Seminar Series; University of Notre Dame (Notre Dame, Indiana); November 17, 2016.

#### PROFESSORIAL LECTURE

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- “What really counts: the joy of enumeration”; Professorial Lecture (in celebration of promotion to the rank of Full Professor); Valparaiso University (Valparaiso, Indiana); April 14, 2022.

#### AWARD PRESENTATION

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- “The Joy of Discovery”; Alder Award Presentation; Mathfest 2014 (Portland, Oregon); August 8, 2014.

#### INVITED PRESENTATIONS

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- “Patterns in permutations”; MathPath Plenary talk; Rockhurst University (Kansas City, Missouri); July 6, 2024.
- “Patterns in permutations”, MSCS Colloquium; St. Olaf College (Northfield, Minnesota); March 11, 2024.
- “What’s in your wallet!?”; MathPath Plenary talk; University of Portland (Portland, Oregon); June 28, 2023.
- “Pattern-avoiding parking functions”; MSU Combinatorics and Graph Theory Seminar; Michigan State University (virtual); September 8, 2022.
- “Patterns in permutations”; MathPath Plenary talk; Mount Holyoke College (South Hadley, Massachusetts); July 22, 2022.
- “Pattern-avoiding parking functions”; UW Combinatorics Seminar; University of Washington (Seattle, Washington); May 18, 2022.
- “Patterns in permutations”, Mathematics Colloquium; Colby College (Waterville, Maine); March 11, 2022.
- “Pattern avoidance in parking functions”; Experimental Math Seminar; Rutgers University (virtual); February 10, 2022.
- “Sorting permutations via shuffles”; Special Session on Experimental Mathematics in Number Theory and Combinatorics; AMS Fall Southeastern Sectional Meeting (virtual); November 20, 2021.
- “Patterns in trees”; Invited Paper Session on Open and Accessible Problems for Undergraduate Research; Mathfest 2021 (virtual); August 5, 2021.

- “Patterns in generalized permutations”; Invited Paper Session on Open and Accessible Areas in Computational Mathematics; Mathfest 2021 (virtual); August 4, 2021.
- “Packing patterns in restricted permutations”, New York Combinatorics Seminar; Brooklyn College (virtual); December 11, 2020.
- “Packing patterns in restricted permutations”; Experimental Math Seminar; Rutgers University (Piscataway, New Jersey); March 5, 2020.
- “What’s in your wallet!?”; Mathematics Seminar; Hofstra University (Hempstead, New York); March 4, 2020.
- “Statistics on hypercube orientations”; Special Session on Experimental and Computer Assisted Mathematics; 2020 Joint Mathematics Meetings (Denver, Colorado); January 18, 2020.
- “Packing patterns in restricted permutations”; Special Session on Patterns in Permutations; AMS Fall Southeastern Sectional Meeting; University of Florida (Gainesville, Florida); November 3, 2019.
- “What’s in your wallet!?”; Mathematics Colloquium; Butler University (Indianapolis, Indiana); October 11, 2019.
- “What’s in your wallet!?”; MathPath Plenary talk; Grand Valley State University (Allendale, Michigan); July 19, 2019.
- “Patterns in Trees”; Special Session on Open and Accessible Problems for Undergraduate Research; 2018 Joint Mathematics Meetings (San Diego, California); January 11, 2018.
- “What’s in your wallet!? ”; Mathematics Colloquium; Grand Valley State University (Allendale, Michigan); October 12, 2017.
- “Sorting with Pop Stacks”; Special Session on Algebraic and Enumerative Combinatorics with Applications; AMS Spring Central Sectional Meeting; Indiana University (Bloomington, Indiana); April 2, 2017.
- “Pattern avoidance in reverse double lists”; Special Session on Enumerative Combinatorics; AMS Fall Central Sectional Meeting; University of St. Thomas (Minneapolis, Minnesota); October 29, 2016.
- “Pattern-avoiding forests”; Special Session on Patterns in Permutations and Words; AMS Spring Eastern Sectional Meeting; Georgetown University (Washington, DC); March 8, 2015.
- “Teaching Inquiry through Experimental Mathematics”; MAA Session on Teaching Inquiry; 2015 Joint Mathematics Meetings (San Antonio, Texas); January 13, 2015.
- “Pattern-avoiding ascent sequences”; AMS Special Session on Enumerative Combinatorics; 2015 Joint Mathematics Meetings (San Antonio, Texas); January 10–11, 2015.
- “Ascent sequences avoiding 0021”; Special Session on Experimental Mathematics in Number Theory, Analysis, and Combinatorics; AMS Fall Eastern Sectional Meeting; Dalhousie University (Halifax, Nova Scotia); October 18, 2014.
- “OEIS meets UGR”; DIMACS Conference on Challenges of Identifying Integer Sequences; Rutgers University (Piscataway, New Jersey); October 9, 2014.



- “Pattern avoidance in double lists”; Special Session on Patterns in Permutations and Words, and Applications; AMS Central Fall Section Meeting; University of Wisconsin - Eau Claire (Eau Claire, Wisconsin); September 21, 2014.
- “How to Count like a Mathematician”; Math Club Talk; University of Wisconsin - Eau Claire (Eau Claire, Wisconsin); October 22, 2013.
- “Pattern Avoidance in Trees”; Rutgers Experimental Math Seminar; Rutgers University (Piscataway, New Jersey); September 26, 2013.
- “Pattern Avoidance in Permutations”; LaCIM Seminar; Université du Québec à Montréal (Montréal, Québec); March 15, 2013.
- “Pattern Avoidance in Rook Monoids”; AMS Special Session on Patterns in Permutations and Words; 2013 Joint Mathematics Meetings (San Diego, California); January 12, 2013.
- “Pattern Avoidance in Trees”; Notre Dame Discrete Math Seminar; University of Notre Dame (Notre Dame, Indiana); November 27, 2012.
- “Non-contiguous Pattern Avoidance in Binary Trees”; AMS Special Session on Permutation Patterns, Algorithms, and Enumerative Combinatorics; AMS Fall 2013 Eastern Section Meeting; Rochester Institute of Technology (Rochester, New York); September 23, 2012.
- “Beautiful Bijections for Permutation Patterns”; MAA Invited Paper Session on Clever Counting or Beautiful Bijection?; 2012 Joint Mathematics Meetings (Boston, Massachusetts); January 5, 2012.
- “Automated Enumeration of Pattern Avoiding Permutations”; Pacific Workshop on Permutation Patterns; Simon Fraser University (Burnaby, British Columbia); March 31, 2011.
- “Pattern-Avoiding Colored Partitions”; AMS Special Session on Enumerative Combinatorics; 2010 Joint Mathematics Meetings (San Francisco, California); January 15, 2010.
- “Counting Pattern-Avoiding Permutations”; Trinity University Mathematics Majors’ Seminar; Trinity University (San Antonio, Texas); November 19, 2009.
- “An Introduction to Enumeration Schemes”; Trinity University Mathematics Colloquium; Trinity University (San Antonio, Texas); November 18, 2009.
- “Counting Pattern-Avoiding Permutations”; Wabash College Math & Computer Science Colloquium; Wabash College (Crawfordsville, Indiana); October 20, 2009.
- “An Introduction to Enumeration Schemes”; AWM Workshop for Women Graduate Students and Recent PhDs; 2009 Joint Mathematics Meetings (Washington, DC); January 8, 2009.
- “Enumeration Schemes for Permutations Avoiding Barred Patterns”; AMS Special Session on Experimental Mathematics; 2009 Joint Mathematics Meetings (Washington, DC); January 5, 2009.
- “Counting Pattern-Avoiding Permutations”; Trinity Research Experience for Undergraduates; Trinity University (San Antonio, Texas); June 11, 2008.
- “How to Cleverly Count Pattern-Avoiding Words”; AMS Special Session on Applications of Computer Algebra in Enumerative and Algebraic Combinatorics; 2008 Joint Mathematics Meetings (San Diego, California); January 8, 2008.

- “All About 1089”; Princeton Graduate Lunch Seminar; Princeton University (Princeton, New Jersey); October 3, 2006.
- “Pebbling and Cover Pebbling”; DIMACS REU; Rutgers University (Piscataway, New Jersey); June 22, 2004.

## CONTRIBUTED CONFERENCE PRESENTATIONS

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- “Packing patterns in restricted permutations”; Seventeenth International Conference on Permutation Patterns; University of Zurich (Zurich, Switzerland); June 20, 2019.
- “On the distribution of peaks (and other statistics)”; Sixteenth International Conference on Permutation Patterns; Dartmouth College (Hanover, New Hampshire); July 12, 2018.
- “Sorting with Pop Stacks”; Fifteenth International Conference on Permutation Patterns; Reykjavik University (Reykjavik, Iceland); June 29, 2017.
- “Pattern avoidance in reverse double lists”; Fourteenth International Conference on Permutation Patterns; Howard University (Washington, DC); June 27, 2016.
- “Pattern avoidance in double lists”; Thirteenth International Conference on Permutation Patterns; DeMorgan House (London, UK); June 15, 2015.
- “Ascent sequences avoiding pairs of patterns”; Twelfth International Conference on Permutation Patterns; East Tennessee State University (Johnson City, Tennessee); July 7, 2014.
- “Avoiding an Ordered Partition of Length 3”; Eleventh International Conference on Permutation Patterns; University of Paris Diderot (Paris, France); July 1, 2013.
- “Non-contiguous Pattern Avoidance in Binary Trees”; Tenth International Conference on Permutation Patterns; University of Strathclyde (Glasgow, Scotland, UK); June 15, 2012.
- “Enumeration Schemes for Dashed Permutation Patterns”; Ninth International Conference on Permutation Patterns; California Polytechnic State University (San Luis Obispo, California); June 21, 2011.
- “Pattern Avoiding Colored Partitions”; Eighth International Conference on Permutation Patterns; Dartmouth College (Hanover, New Hampshire); August 9, 2010.
- “Avoiding the Pattern (bar 3)(bar 1)542”; Seventh International Conference on Permutation Patterns; University of Firenze (Florence, Italy); July 16, 2009.
- “Enumeration Schemes for Permutations Avoiding Barred Patterns”; Sixth International Conference on Permutation Patterns; University of Otago (Dunedin, New Zealand); June 17, 2008.
- “Barred Permutation Patterns”; Graduate Student Combinatorics Conference 2008; University of California (Davis, California); April 12, 2008.
- “Schemes for Pattern-avoiding Words”; Prague Midsummer Combinatorial Workshop XIII; Charles University (Prague, Czech Republic); August 1, 2007.
- “Schemes for Pattern-Avoiding Words”; Fifth International Conference on Permutation Patterns; University of St. Andrews (St. Andrews, Scotland, UK); June 11, 2007.
- “How to Count Words Cleverly”; Graduate Student Combinatorics Conference 2007; University of Washington (Seattle, Washington); April 21, 2007.

- “A Bijection on  $\{123-132\}$ -Avoiding Multiset Permutations”; Fourth International Conference on Permutation Patterns; Reykjavik University (Reykjavik, Iceland); June 12, 2006.
- “Graph Cover Pebblings”; Indiana Section MAA meeting; Butler University (Indianapolis, Indiana); March 28, 2003.
- “Graphs of Essentially Equivalent Lattice Paths”; Nebraska Conference for Undergraduate Women in Mathematics; University of Nebraska (Lincoln, Nebraska); February 8, 2003.
- “Constructing Planar Regions with Maximal Distance  $d(P,Q)$ ”; Indiana Section MAA Meeting; Earlham College (Richmond, Indiana); April 8, 2000.

#### LOCAL COLLOQUIUM/SEMINAR PRESENTATIONS

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- “Patterns in Permutations”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); March 19, 2021.
- “Mathematics as Play”; Mortar Board Last Lecture series; Valparaiso University (Valparaiso, Indiana); February 12, 2018.
- “Sorting with Pop Stacks”; Math and Statistics Faculty Research Seminar; Valparaiso University (Valparaiso, Indiana); March 21, 2017.
- “What’s in Your Wallet!?”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); January 27, 2017.
- “How to Count like a Mathematician”; Valparaiso Experience in Research by Undergraduate Mathematicians (VERUM) Seminar; Valparaiso University (Valparaiso, Indiana); June 7, 2013.
- “How to Count like a Mathematician”; Christopher Center Faculty Seminar; Valparaiso University (Valparaiso, Indiana); March 27, 2013.
- “Experimenting with Barred Patterns”; Rutgers Experimental Math Seminar; Rutgers University (Piscataway, New Jersey); March 13, 2008.
- “Counting Trees”; Rutgers Pizza Seminar; Rutgers University (Piscataway, New Jersey); February 1, 2008.
- “An Introduction to Enumeration Schemes (or How I Taught My Computer to Count)”; Rutgers Graduate Combinatorics Seminar; Rutgers University (Piscataway, New Jersey); December 10, 2007.
- “How to Count Permutations Cleverly”; Rutgers Pizza Seminar; Rutgers University (Piscataway, New Jersey); September 13, 2006.
- “The Bergman Complex of a Matroid”; Rutgers Tropical Math Seminar; Rutgers University (Piscataway, New Jersey); November 16, 2005.
- “All About 1089”; Rutgers Pizza Seminar; Rutgers University (Piscataway, New Jersey); October 14, 2005.
- “Pebbling, Cover Pebbling, and Chocolate”; Rutgers Pizza Seminar; Rutgers University (Piscataway, New Jersey); March 26, 2004.
- “An Introduction to Hypergraphs”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); March 18, 2003.

- “Cross Numbers of Minimal Zero Sequences”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); February 5, 2002.
- “Circumellipses”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); April 17, 2001.
- “Curves of Constant Width”; Undergraduate Colloquium; Valparaiso University (Valparaiso, Indiana); October 17, 2000.

## NON-RESEARCH PRESENTATIONS

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- “MathPath and Its Indiana Connections” (joint with Matt DeLong, Marian University); MAA Indiana Section Meeting; Indiana Wesleyan University (Marion, Indiana); April 9, 2022.
- “What is a Mathematician?”; 6th, 7th, and 8th grade guest speaker; Immanuel Lutheran School (Memphis, Tennessee); December 18, 2012.
- “What is a Mathematician?”; Discoveries Unlimited Speaker’s Bureau presentation; Valparaiso University (Valparaiso, Indiana); October 18, 2012
- “The Valpo Path to Success”; Valparaiso Scholarship Day 2011 Mathematical Sciences presentation; Valparaiso University (Valparaiso, Indiana); February 18, 2011.
- “The Valpo Path to Success”; Valparaiso Scholarship Day 2010 Mathematical Sciences presentation; Valparaiso University (Valparaiso, Indiana); February 6, 2010.
- “Dealing with Different Levels of Academic Preparation”; Rutgers TA Project Workshop; Rutgers University (Piscataway, New Jersey); February 13, 2008.
- “What is a Mathematician?”; 8th grade guest speaker; Immanuel Lutheran School (Memphis, Tennessee); January 11, 2008.
- “Assessment and Feedback”; Introduction to College Teaching 2 lecture (joint with Esther Leibovich, Rutgers Ecology & Evolution Department); Rutgers University (Piscataway, NJ); November 14, 2007.
- “Designing Creative Assignments”; Introduction to College Teaching 2 lecture (joint with Colleen Kennedy, Rutgers French Department); Rutgers University (Piscataway, NJ); October 31, 2007.
- “Dealing with Different Levels of Academic Preparation”; Rutgers TA Project Workshop; Rutgers University (Piscataway, New Jersey); February 21, 2007.

## PANELIST PRESENTATIONS

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- “Jumpstarting Undergraduate Research: How to find funding for your undergraduate research”; Project NExT panel; Joint Mathematics Meetings (Boston, Massachusetts); January 5, 2023.
- Opportunities Panel; Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians (OURFA<sup>2</sup>M<sup>2</sup>) (virtual); November 19, 2022.
- Panel on Education Programs; Three Decades of DIMACS: The Journey Continues; New Brunswick, New Jersey; November 22, 2019.
- Undergraduate Research SIGMAA panel on choosing problems for undergraduate research; Mathfest 2019 (Cincinnati, Ohio); August 3, 2019.

- “Engaging Students in Undergraduate Research: The Role of Effective Advising”; Mathfest 2018 (Denver, Colorado); August 1, 2018.
- “Implementing the 2015 CUPM Content Recommendations”; MAA Indiana Section Meeting, Manchester University, October 7, 2017.

#### CONFERENCES ORGANIZED

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- International Conference on Permutation Patterns, Valparaiso University, June 20–24, 2022.
- 2020 Virtual Workshop on Permutation Patterns, June 30–July 1, 2020.
- Mathematical Association of America Spring 2019 Indiana Section meeting, University of Indianapolis, April 5–6, 2019.
- Mathematical Association of America Fall 2018 Indiana Section meeting, Hanover College, October 13, 2018.
- Permutation Patterns 2018, Dartmouth College, July 9–13, 2018.
- DIMACS Conference on Challenges of Identifying Integer Sequences, DIMACS, Rutgers University, October 9–10, 2014.
- From  $A=B$  to  $Z=60$ : A Conference in Honor of Doron Zeilberger’s 60th Birthday, Rutgers University, May 27–28, 2010.

#### CONFERENCE SESSIONS ORGANIZED

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- Special Session on Enumerative Combinatorics, AMS Fall Central Sectional Meeting, University of Texas San Antonio, September 14–15, 2024.
- Special Session on Enumerative Combinatorics and Graph Theoretic Applications, AMS Fall Central Sectional Meeting, Loyola University Chicago, October 3–4, 2015.

#### PANELS CO-ORGANIZED

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- “What Did You Do? What Will You Keep? Reflections on Mentoring Undergraduate Researchers During and Post-Pandemic”, Joint Mathematics Meetings (virtual), April 7, 2022.
- “Goals and Pedagogy for Remedial Mathematics”, MAA Indiana Section Meeting, IPFW, May 5, 2014.
- “Publishing Undergraduate Research”, MAA Indiana Section Meeting, University of Southern Indiana, October 26, 2013.
- “Incorporating History across the Mathematics Curriculum”, MAA Indiana Section Meeting, Indiana University East, March 23, 2013.
- “Inquiry Based Learning”, MAA Indiana Section Meeting, Butler University, October 27, 2012.
- “Establishing Interdisciplinary research collaborations”, MAA Indiana Section Meeting, Indiana Wesleyan University, April 9, 2011.
- “Transitioning Students from High School to College Mathematics”, MAA Indiana Section Meeting, Purdue North Central University, October 16, 2010.
- “Undergraduate Research”, MAA Indiana Section Meeting, Franklin College, April 10, 2010.

## INVITED WORKSHOP PARTICIPATION

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- Dagstuhl Seminar on Pattern Avoidance, Statistical Mechanics and Computational Complexity, March 2023.

## UNDERGRADUATE RESEARCH SUPERVISED

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- Deven Harris, Jacob Roth, and Austin Schnoor, “Pattern avoidance in generalized permutations”, Math 496, 2019–2020.
  - Poster presentation at Valparaiso Symposium on Undergraduate Research and Creative Expression, May 14, 2020.
- Julia Krull, Eric Redmon, and Andrew Reimer-Berg, “Pattern Packing in Words”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2018.
  - Poster presentation at Sixteenth International Conference on Permutation Patterns; Dartmouth College (Hanover, New Hampshire); July 9, 2018.
  - Student presentation at Indiana Undergraduate Research Conference (Indiana University), July 24, 2018.
  - Poster presentation at Valparaiso Summer Interdisciplinary Research Symposium, July 30, 2018.
  - Poster presentation at 2019 Joint Mathematics Meetings, January 18, 2019.
- Michael Bukata, Ryan Kulwicki, Nicholas Lewandowski, Jacob Roth, and Teresa Wheeland, “Statistics on Pattern-avoiding Permutations”, Math 496, 2017–2018 and MSEED summer research, 2018.
  - Poster presentation at Valparaiso Symposium on Undergraduate Research and Creative Expression, May 3, 2018.
  - Poster presentation at Sixteenth International Conference on Permutation Patterns; Dartmouth College (Hanover, New Hampshire); July 9, 2018.
  - Poster presentation at Valparaiso Summer Interdisciplinary Research Symposium, July 30, 2018.
  - Poster presentation at University of Illinois Chicago Undergraduate Mathematics Symposium, November 10, 2018.
  - Resulting work published in *Journal of Integer Sequences*.
  - Student Jacob Roth was selected as a 2019–2020 National Goldwater Scholar with a research statement that grew out of this project.
- Felipe Alzate, Bill Mackelfresh, and Lily Wisniewski, “Statistics on Shuffles”, Math 492, 2015–2016.
  - Poster presentation at Valparaiso Celebration of Undergraduate Scholarship, April 23, 2016.
- Marika Diepenbroek, Monica Maus, and Alex Stoll, “Pattern avoidance in reverse double lists”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2015.
  - Student presentation at Indiana Undergraduate Research Conference (Indiana University), July 23, 2015.

- Outstanding poster prize at 2016 Joint Mathematics Meetings Undergraduate Poster Session, January 8, 2016.
- Resulting work published in *Discrete Mathematics and Theoretical Computer Science (DMTCS)*.
- Charles Cratty, Samuel Erickson, and Frehiwet Negassi, “Pattern avoidance in double lists”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2014.
  - Student presentation at Indiana Undergraduate Research Conference (IUPUI), July 23, 2014.
  - Poster presentation at 2015 Joint Mathematics Meetings, January 12, 2015.
  - Resulting work published in *Involve: a Journal of Mathematics*.
- Rachel Rockey, “deBruijn arrays for L-fillings”, MSEED summer research student, 2013.
  - Student presentation at Indiana MAA meeting, IPFW (Fort Wayne, IN), April 5, 2014.
  - Poster presentation at Valparaiso Celebration of Undergraduate Scholarship, May 3, 2014.
  - Resulting work published in *Mathematics Magazine*.
- Timothy Goodrich, Will Olson, and Ruyue Yuan, “Multi-Sorting Permutations with Finite Stacks”, Math 492, 2012–2013.
  - Poster presentation at 2013 Joint Mathematics Meetings, January 11, 2013.
  - Two student presentations at Rose Hulman Undergraduate Research Conference, April 19–20, 2013.
  - Poster presentation at Valparaiso Celebration of Undergraduate Scholarship, April 24, 2013.
- Connor Scholten, Tyler Schrock, and Alexa Serrato, “Non-contiguous Pattern Containment in Trees”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2012.
  - Student presentation at Indiana Undergraduate Research Conference (Indiana University), July 17, 2012.
  - Poster presentation at 2013 Joint Mathematics Meetings, January 11, 2013.
  - Resulting work published in *ISRN Combinatorics*.
- Timothy Goodrich, Drew Groth, and Lauren Knop, “Sorting Permutations with Finite Stacks”, Math 492, 2011–2012.
  - Student presentation at Indiana MAA meeting, Ball State University, March 24, 2012.
  - Poster presentation at Valparaiso Celebration of Undergraduate Scholarship, April 24, 2012.
- Michael Dairyko, Samantha Tyner, and Casey Wynn, “Pattern Avoidance in Trees”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2011.
  - Student presentation at Indiana Undergraduate Research Conference (Indiana University), July 27, 2011.

- Poster presentation at 2012 Joint Mathematics Meetings, January 6, 2012.
- Resulting work published in *Electronic Journal of Combinatorics*.
- Samantha Frisk, Drew Groth, and Lexi Paradine, “The Derivative of an Integer”, *Math* 492, 2010–2011.
  - Presented poster at Valparaiso Celebration of Undergraduate Scholarship, April 20, 2011.
- Nathan Gabriel, Katie Peske, and Sam Tay, “Pattern Avoidance in Ternary Trees”, Valparaiso Experience in Research by Undergraduate Mathematicians, 2010.
  - Student presentation at Indiana Undergraduate Research Conference (Indiana University), July 29, 2010.
  - Outstanding poster prize at 2011 Joint Mathematics Meetings Undergraduate Poster Session, January 8, 2011.
  - Resulting work published in *Journal of Integer Sequences*.
- Samantha Frisk, Patrick Slattery, Brittany Wagoner, and Kelsey Watson, “Medians of Permutations”, *Math* 492, 2009–2010.
  - Student presentation at Indiana MAA meeting, Franklin College, April 10, 2010.
  - Presented poster at Valparaiso Celebration of Undergraduate Scholarship, April 21, 2010.

## UNDERGRADUATE RESEARCH CONSULTING

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(\* denotes undergraduate student)

- Polina Kogay\*, Justin Bui\*, Alexander Lau\*, Lara Pudwell, and Mark M. Budnik, “Capacitance Extractions for New Carbon Nanotube Capacitor Electrode Structures”, 2010 Nanotechnology Symposium, Louisville, KY, September 24–25, 2010.

## PH.D. THESIS COMMITTEE MEMBER

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- Yoong Kuan (Andrew) Goh, “Variations of Stack Sorting and Pattern Avoidance”, University of Technology, Sydney, December 2019
- Nathaniel Shar, “Experimental Methods in Permutation Patterns and Bijective Proofs”, Rutgers University, March 2016.

## OUTREACH ACTIVITIES

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- MathPath Instructor for “Basic Counting”, “Generating functions and sequences”, and “Counting permutations” breakouts, July 2023.
- MathPath Instructor for “Compositions, Partitions, and Fibonacci Numbers”, “Catalan numbers”, and “Counting permutations” breakouts, July 2022.
- Member, MathPath 2021 Admissions Committee.
- MathPath Instructor for “Catalan numbers”, “Proof by story”, “Generating functions and sequences” and “Counting permutations” breakouts, July 2020, and July 2021.
- MathPath Instructor for “Generating functions and sequences” and “Counting permutations” breakouts, July 2019.



## SERVICE: PROFESSIONAL

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- Associate Editor, Bulletin of the AMS Editorial Board for Book Reviews, 2023–2028.
- Member, MAA Committee on the James R. C. Leitzel Lecture, 2022–2025.
- Member, Indiana MAA ad hoc Bylaws Committee, 2021–2022.
- Member, Enumerative Combinatorics and Applications editorial board, 2020–present.
- Member, On-Line Encyclopedia of Integer Sequences Board of Trustees, 2019–present.
- Guest Editor, Permutation Patterns 2019 Conference Proceedings volume in *Discrete Mathematics and Theoretical Computer Science*.
- Member, Indiana MAA Distinguished Teaching Award Committee, 2018–2022 (chair, 2020–2021).
- Chair, Indiana Section of the MAA, 2018–2019.
- Guest Editor, Permutation Patterns 2018 Conference Proceedings volume in *Discrete Mathematics and Theoretical Computer Science*.
- Vice chair, Indiana Section of the MAA, 2017–2018.
- Member, AWM Mentoring Grant Selection Committee, 2017–2019.
- Participant, MAA Instructional Practices Workshop, October 2015.
- Mentor, MAA Project NExT Consultant Program, Red 2015, Blue 2017, Brown 2020 cohorts.
- Member, Ball State Undergraduate Mathematics Exchange editorial board, 2014–present.
- Member, Rose-Hulman Undergraduate Mathematics Journal editorial board, 2014–present.
- CUR (Council on Undergraduate Research) Councilor, Mathematics and Computer Science Division, 2014–2017.
- Member, National Science Foundation Funding Review Panel, November 2013.
- Rose Hulman Undergraduate Mathematics Conference, best student presentation selection panel, 2013.
- International Conference on Permutation Patterns Steering Committee, 2012–present.
- Authored Franklin College’s Joint Comprehensive Mathematics Exam, Fall 2010, 2011.
- Member, National Science Foundation Funding Review Panel, November 2010.
- Member, National Science Foundation Funding Review Panel, January 2010.
- Member, Indiana MAA Nominating Committee, 2009–2014 (chair, 2010–2011, 2013–2014).
- Indiana Section NExT Vice Coordinator 2009–2012, Coordinator 2012–2014.
- Ad hoc reviewer for 30 journals.

## SERVICE: UNIVERSITY

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- Member, Arts and Sciences metrics committee, 2024

- Vice President, Phi Beta Kappa Eta of Indiana Chapter, 2022–2025.
- Member, Brandt Professorship selection committee, 2021.
- Member, Fraternity Man and Sorority Woman of the Year selection committee, 2021.
- Member, Baccalaureate Task Force, 2019–2020.
- Member, Academic Affairs Budget Working Group, 2018–2019.
- Member, Valparaiso University Fraternity and Sorority Expansion Committee, 2017 – present.
- Member, VU Campus Judicial Board, 2014 – present.
- Advisor, Phi Delta Theta fraternity, Indiana Iota chapter, (faculty advisor 2012 – 2019, advisory board chair, 2019 – present).
- Member, Valparaiso Creative Work and Research Committee, 2012 – 2020, (chair 2017 – 2020).
- Member, VU Student Scholarship Advisory Committee, 2011 – 2014.
- Member, VU Faculty Grievance Committee, 2011 – 2013.
- Member, Steering Committee for VU summer undergraduate research programs, 2010 – 2014, 2018.

#### SERVICE: COMMUNITY

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- Member of P.E.O. (Philanthropic Educational Organization), which raises funding for grants, scholarships, and loans for higher education for women, 2010 – present.
- Authored Immanuel Lutheran School’s annual academic challenge mathematics questions, Fall 2010–2019.
- STEM Mentor for Discoveries Unlimited, 2010 – 2013.

#### PROFESSIONAL DEVELOPMENT

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- Participant in Valparaiso University’s Wentz Seminar on Faith and Pedagogy, Spring 2020.
- Participant in Valparaiso University’s Writing-in-the-Discipline (WID) Certification Workshop, May 2019.
- Participant in MAA Minicourse on Teaching Linear Algebra: Learning Concepts Often Difficult to Understand, Mathfest 2016.
- Participant in New Directions for Mathematics Research Experiences for Undergraduates conference, June 2013.
- Participant in Trends in Undergraduate Research in the Mathematical Sciences conference, October 2012.
- Participant in MAA Short Course on Sage, Mathfest 2010.
- Project NExT Fellow, 2008–2009.

#### PROFESSIONAL MEMBERSHIPS

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- Mathematical Association of America (since 1999)
- American Mathematical Society (since 2001)

- Association for Women in Mathematics (since 2003)
- Council on Undergraduate Research (since 2012)
- National Association of Mathematicians (since 2020)

## COURSES TAUGHT

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- Intermediate Algebra
- College Algebra
- Trigonometry and Functions
- Calculus and Functions I and II
- Calculus I, II, and III
- Combinatorics I and II
- Discrete Mathematics
- Experimental Mathematics
- Finite Mathematics
- Linear Algebra
- Linear Systems and Matrices
- Mathematical Ideas: Math of Voting and Elections
- Transitions in Mathematics

## REFERENCES

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Available upon request.