

**Contact Information** Northern Arizona University [dana.ernst@nau.edu](mailto:dana.ernst@nau.edu)  
 Department of Mathematics & Statistics <http://dcernst.github.io>  
 801 South Osborne Drive, PO Box 5717 [@danaernst](https://twitter.com/danaernst)  
 Flagstaff, AZ 86011 928.523.6852

**Education** **University of Colorado**, Boulder, CO Aug 2008  
 PhD, Mathematics, Advisor: Dr. R.M. Green  
 Dissertation: *A diagrammatic representation of an affine  $C$  Temperley–Lieb algebra*  
**Northern Arizona University**, Flagstaff, AZ May 2000  
 MS, Mathematics, Advisor: Dr. M. Falk  
 Thesis: *Cell complexes for arrangements with group actions*  
**George Mason University**, Fairfax, VA May 1997  
 BS, Mathematics

**Academic Positions** **Northern Arizona University**, Flagstaff, AZ Aug 2012–Present  
*Assistant Professor*, Department of Mathematics & Statistics  
**Plymouth State University**, Plymouth, NH Aug 2008–May 2012  
*Assistant Professor*, Mathematics Department  
**University of Colorado**, Boulder, CO Aug 2003–May 2008  
*Graduate Teaching Instructor*, Department of Mathematics  
*Lead Graduate Teacher*, Graduate Teacher Program Aug 2006–May 2007  
**Front Range Community College**, Boulder, CO Aug 2001–May 2003  
*Full-time Faculty*, Department of Mathematics  
**Northern Arizona University**, Flagstaff, AZ Jun 2000–May 2001  
*Instructor*, Mathematics & Statistics Department  
*Graduate Assistant*, North Learning Assistance Center Jan 2000–May 2000  
*Graduate Teaching Instructor*, Mathematics & Statistics Department Jan 1998–Dec 1999  
*Graduate Assistant*, South Learning Assistance Center Aug 1997–Dec 1997

**Research Interests** **General**  
 Interplay between combinatorics and algebraic structures; scholarship of teaching and learning (SoTL) and undergraduate mathematics education.  
**Specific**  
 Combinatorics of Coxeter groups and their associated Hecke algebras, Kazhdan–Lusztig theory, generalized Temperley–Lieb algebras, diagram algebras, heaps of pieces; combinatorial game theory; inquiry-based learning (IBL).

**Publications** **Submitted/Preprints**  
 S3. B. Benesh, **D.C. Ernst**, and N. Sieben. Impartial achievement and avoidance games for generating generalized dihedral groups. Submitted to *Australas. J. Combin.*  
 S2. **D.C. Ernst** and N. Sieben. Impartial achievement and avoidance games for generating finite groups. Submitted to *Int. J. Game Theory*. [[arXiv:1407.0784](https://arxiv.org/abs/1407.0784)]

- S1. **D.C. Ernst**. Diagram calculus for a type affine  $C$  Temperley–Lieb algebra, II. Submitted to *J. Pure Appl. Alg.* [[arXiv:1101.4215](#)]

### Journal Articles

- J12. **D.C. Ernst**, M. Hastings\*, and S. Salmon\*. Factorization of Temperley–Lieb diagrams. Accepted to *Involve*. [[arXiv:1509.01241](#)]
- J11. B.J. Benesh, **D.C. Ernst**, and N. Sieben. Impartial avoidance and achievement games for generating symmetric and alternating groups. *Int. Electron. J. Algebra* 20, 70–85, 2016. [[arxiv:1508.03419](#)] [[ePrint](#)]
- J10. N. Diefenderfer, **D.C. Ernst**, M. Hastings\*, L.N. Heath\*, H. Prawzinsky\*, B. Preston\*, J. Rushall, E. White\*, A. Whittemore\*. Prime Vertex Labelings of Several Families of Graphs. *Involve* 9(4), 667–688, 2016. [[arXiv:1503.08386](#)]
- J9. B.J. Benesh, **D.C. Ernst**, and N. Sieben. Impartial avoidance games for generating finite groups. *North-W. Eur. J. of Math.* 2, 83–101, 2016. [[arXiv:1506.07105](#)] [[ePrint](#)]
- J8. H. Denoncourt, **D.C. Ernst**, and D. Story\*. On the number of commutation classes of the longest element of the symmetric group. *Open Problems in Mathematics* Vol 4, 2016. [[arXiv:1602.08328](#)] [[ePrint](#)]
- J7. E. Kennedy, B. Beaudrie, **D.C. Ernst**, and R. St. Laurent. Inverted Pedagogy in Second Semester Calculus. *PRIMUS* 25(9–10), 892–906, 2015.
- J6. B. Love, A. Hodge, C. Corritore, and **D.C. Ernst**. Inquiry-Based Learning and the Flipped Classroom Model. *PRIMUS* 25(8), 745–762, 2015.
- J5. **D.C. Ernst**, M. Leingang, and R. Taylor. To friend or not to friend? Facebook for professional educators. *MAA FOCUS* June/July 2015. [[ePrint](#)]
- J4. **D.C. Ernst**, A. Hodge, and A. Schultz. Enhancing Proof Writing via Cross-Institutional Peer Review. *PRIMUS* 25(2), 121–130, 2015.
- J3. **D.C. Ernst**. Diagram calculus for a type affine  $C$  Temperley–Lieb algebra, I. *J. Pure Appl. Alg.* 216(11), 2012. [[arXiv:0910.0925](#)]
- J2. T. Boothby\*, J. Burkert\*, M. Eichwald\*, **D.C. Ernst**, R.M. Green, and M. Macauley. On the cyclically fully commutative elements of Coxeter groups. *J. Algebraic Combin.* 36(1), 2012. [[arXiv:1202.6657](#)]
- J1. **D.C. Ernst**. Non-cancellable elements in type affine  $C$  Coxeter groups. *Int. Electron. J. Algebra* 8, 2010. [[arXiv:0910.0923](#)]

### Book Chapters

- BC2. **D.C. Ernst** and A. Hodge. Within  $\epsilon$  of Independence: An Attempt to Produce Independent Proof-Writers via IBL. Accepted as book chapter to *Beyond Lecture: Techniques to Improve Student Proof-Writing Across the Curriculum*, MAA Notes.
- BC1. **D.C. Ernst**, A. Hodge, M. Jones, and S. Yoshinobu. The many faces of IBL. In *Handbook of Research on Pedagogical Practice in STEM Education*, E. Ostler (Ed.), 2015.

**Conference Proceedings (Peer-Reviewed)**

- C2. B. Beaudrie, **D.C. Ernst**, and B. Boschmans. Redesigning an Algebra for Precalculus Course. In *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, T. Bastiaens & G. Marks (Eds.), 2013.
- C1. B. Beaudrie, **D.C. Ernst**, and B. Boschmans. First Semester Experiences in Implementing a Mathematics Emporium Model. In *Proceedings of Society for Information Technology & Teacher Education International Conference*, R. McBride & M. Searson (Eds.), 2013.

**Open-Source Books**

- B2. **D.C. Ernst**. *An Inquiry-Based Approach to Abstract Algebra*, 122 pages. IBL course materials for an abstract algebra course. [[dcernst.github.io/IBL-AbstractAlgebra](https://github.com/dcernst/IBL-AbstractAlgebra)]
- B1. **D.C. Ernst**. *An Introduction to Proof via Inquiry-Based Learning*, 69 pages. IBL course materials for an introduction to proof course. [[dcernst.github.io/IBL-IntroToProof](https://github.com/dcernst/IBL-IntroToProof)]

**Online Columns & Blog Posts**

- O17. **D.C. Ernst**. Fostering productive failure. *Teaching Tidbits*. To appear in Spring 2017.
- O16. **D.C. Ernst**. Encouraging students to generate examples and counterexamples. *Teaching Tidbits*. To appear in Fall 2016.
- O15. **D.C. Ernst**. Teaching Calculus 1 with a Focus on Student Presentations. *Discovering the Art of Mathematics Blog*. Oct 2015. [[artofmathematics.org](http://artofmathematics.org)]
- O14. **D.C. Ernst**. Setting the Stage. *Math Ed Matters*. Jan 2015. [[Math Ed Matters](#)]
- O13. **D.C. Ernst**. The Twin Pillars of IBL. *Math Ed Matters*. Jan 2015.
- O12. **D.C. Ernst**. Fear is the mind-killer. *Math Ed Matters*. Jun 2014.
- O11. **D.C. Ernst**. Encouraging Students to Tinker. *Math Ed Matters*. Aug 2014.
- O10. **D.C. Ernst**, A. Hodge, and T.J. Hitchman. Engaging in Inquiry-Based Learning. *Math Ed Matters*. Feb 2014.
- O9. **D.C. Ernst** and A. Hodge. Math Ed Mania at the JMM. *Math Ed Matters*. Jan 2014.
- O8. **D.C. Ernst** and A. Hodge. The JMM: What's Mathematics Education Got to Do with It? *Math Ed Matters*. Dec 2013.
- O7. **D.C. Ernst**. Give the Students the Colored Pen. *Math Ed Matters*. Aug 2013.
- O6. **D.C. Ernst** and R. Talbert. 4+1 interview with Dana Ernst. *Casting Out Nines*, The Chronicle Blog Network. Aug 2013. [[chronicle.com/blognetwork/castingoutnines](http://chronicle.com/blognetwork/castingoutnines)]
- O5. **D.C. Ernst**. Personality Matters? *Math Ed Matters*. Jul 2013.
- O4. **D.C. Ernst**. Grade School Utopia? *Math Ed Matters*. Jul 2013.
- O3. **D.C. Ernst** and A. Hodge. Try, Fail, Understand, Win. *Math Ed Matters*. Jun 2013.
- O2. **D.C. Ernst**. What the Heck Is IBL? *Math Ed Matters*. May 2013.
- O1. **D.C. Ernst** and S. Yoshinobu. IBL Instructor Perspectives: Professor Dana Ernst. *The IBL Blog*. Feb 2012. [[TheIBLBlog.com](http://TheIBLBlog.com)]

**In Preparation**

- P4. **D.C. Ernst** and R.M. Green. Cominuscule elements of Coxeter groups of type affine  $C$ .
- P3. B.J. Benesh, **D.C. Ernst**, and N. Sieben. Impartial achievement games for generating finite groups.
- P2. **D.C. Ernst** and B. Fox. Conjugacy classes of cyclically fully commutative elements in Coxeter groups of type  $A$ .
- P1. **D.C. Ernst** and T. Laird\*. T-avoiding elements of Coxeter groups.

**Grant  
Activity**

*PRODUCT* (Funded: \$2,800,000) 2015–2020  
Senior Personnel, NSF-IUSE. Participate in the development of facilitators for Inquiry-Based Learning workshops and assist in the delivery of workshops.

*SPIGOT* (Funded: \$540,000) 2013–2015  
Senior Personnel, NSF-TUES II. The IBL Workshop provides an intensive four-day program for math instructors interested in learning to implement IBL in college-level mathematics courses. A comprehensive follow-up program is also provided after the workshop that includes mentoring, course materials, and continued interaction at upcoming conferences.

*ROPE: Resource of Open Problems for Education* (Unfunded) Fall 2014 & Spring 2014  
Co-PI, NSF-IUSE. Requested funds to develop an online, electronic library that provides a large number of innovative, well-tested, and documented problems that instructors and students may use in a wide range of courses and for a wide range of assignment types. Joint with G. LaRose (University of Michigan) and S. Hamblen (McDaniel College).

*Applets for Calculus* (Funded: \$1,296) Fall 2013  
PI, Interns to Scholars (I2S) Program at NAU. Awarded funds to support one undergraduate intern during the Spring 2014 and Fall 2014 semesters to work 6 hours per week for 10 weeks on creating applets for first semester calculus.

*Prime labelings of graphs* (Funded: \$33,100) Fall 2013  
PI, Center for Undergraduate Research in Mathematics (CURM). Awarded funds to support seven undergraduate students to conduct research for 2014–2015 academic year. Joint with J. Rushall (NAU).

*Toward's a Cyclic Version of Matsumoto's Theorem* (Unfunded) Fall 2013  
PI, Faculty Grants Program at NAU. Requested one month of summer salary to support my research program in the combinatorics of Coxeter groups.

*Undergraduate Research Program in Mathematics* (Unfunded) Fall 2013  
Senior Personnel, NSF-DMS: Workforce Division. Requested support for REU program at NAU for summers of 2014–2016.

*An open problem library for mathematics* (Funded: \$7,500) Summer 2013–Spring 2014  
PI, Faculty Grants Program at NAU. Awarded summer salary to support development of an online open problem library for undergraduate mathematics courses.

*Toward a factorization of Temperley–Lieb diagrams* (Unfunded) Spring 2013  
PI, NAU NASA Space Grant Program. Requested support for two undergraduate research students for the 2013–2014 academic year.

*Undergraduate Research Program in Mathematics* (Unfunded) Fall 2012  
Senior Personnel, NSF-DMS: Workforce Division. Requested support for REU program at NAU for summers of 2013–2015.

*Combinatorics of the CFC elements Coxeter groups* (Unfunded) Fall 2012  
PI, Center for Undergraduate Research in Mathematics (CURM). Requested funds to support three undergraduate students to conduct research for academic year.

*An Open Problem Library for Mathematics* (Unfunded) Spring 2012  
Co-PI, NSF-TUES. Proposal seeks to develop an online, electronic library that will provide a large number of innovative, well-tested, and documented problems that instructors and students may use in a wide range of courses and for a wide range of assignment types. Joint with G. LaRose (University of Michigan) and S. Hamblen (McDaniel College).

*IBL course materials for group theory* (Funded: \$2,500) Summer 2013  
PI, Academy of Inquiry-Based Learning. Awarded Category 2 Small Grant to fund development of course materials for an IBL abstract algebra course that emphasizes visualization and incorporates technology.

*Conjugacy and reducibility in Coxeter groups* (Unfunded) Fall 2010  
Co-PI, NSF-DMS: Number Theory, Algebra, and Combinatorics. Requested funds to support summer research and travel for PIs and full-year support for undergraduate research assistants. Joint with R.M. Green (CU Boulder) and M. Macauley (Clemson).

*Combinatorics of the CFC-finite Coxeter groups* (Unfunded) Spring 2010  
PI, Center for Undergraduate Research in Mathematics (CURM). Requested funds to support two undergraduate students to conduct research for academic year.

*The conjugacy problem for Coxeter groups* (Unfunded) Fall 2009  
Co-PI, NSF-DMS: Number Theory, Algebra, and Combinatorics. Requested funds to support summer research and travel for PIs and full-year support for undergraduate research assistants. Joint with R.M. Green (CU Boulder) and M. Macauley (Clemson).

## Teaching Experience

### Summary

Almost 20 years of teaching experience; recipient of several teaching awards (most recent: 2016 MAA Southwest Section Teaching Award).

### Courses Taught

Reflection Groups and Coxeter Groups (graduate), Real Analysis, Abstract Algebra (graduate and undergraduate), Number Theory, Linear Algebra, Introduction to Proof, Problem Solving, Calculus I–III, Precalculus, Trigonometry, College Algebra, Survey of Algebra, Finite Math, Quantitative Reasoning, College Math with Applications, Mathematics for Elementary School Teachers I, Math Teacher Training.

## Advising & Mentoring

### Masters Theses

*A Study of  $T$ -Avoiding Elements of Coxeter Groups* Spring 2016  
Student: Taryn Laird (NAU).

*Exploration of the type  $\tilde{C}$  Temperley–Lieb algebra* Spring 2016  
Student: Kevin Salmon (NAU).

*Conjugacy classes of CFC elements in Coxeter groups of type  $A$*  Spring 2014  
Student: Brooke Fox (NAU).

*A cellular quotient of the Temperley–Lieb algebra of type D* Spring 2014  
Student: Kirsten Davis (NAU).

### Undergrad Research Projects

*Cominuscule elements of Coxeter groups of type affine C* Spring 2016  
Students: Joni Hazelman, Parker Montfort, Robert Voinescu, Ryan Wood (NAU). 2 presentations.

*A simplified version of Conway’s Sylver Coinage* Fall 2015–Spring 2016  
Students: Joni Hazelman, Parker Montfort, Robert Voinescu, Ryan Wood (NAU). 4 presentations.

*Commutation classes of the longest element in the symmetric group* Fall 2015–Spring 2016  
Student: Dustin Story (NAU). 2 presentations, 1 publication.

*Prime vertex labelings of graphs* Fall 2014–Spring 2015  
Students: Nathan Diefenderfer, Michael Hastings, Levi Heath, Hannah Prawzinsky, Briahna Preston, Emily White, and Alyssa Whittemore (NAU). 5 presentations, 2 publications. Joint with J. Rushall (NAU). Funded by a mini-grant from the Center for Undergraduate Research in Mathematics (CURM).

*Diagrammatic representation of the canonical basis for a TL-algebra* Spring 2014  
Student: Molly Green (NAU). 2 presentations.

*Factorization of Temperley–Lieb diagrams* Fall 2013–Spring 2014  
Students: Michael Hastings and Sarah Salmon (NAU). 5 presentations, 1 publication.

*Exploration of T-avoiding elements in Coxeter groups of type F* Spring 2013  
Student: Selina Gilbertson (NAU). 2 presentations.

*Mathematics of Spinpossible* Spring 2013–Spring 2014  
Students: Dane Jacobson and Michael Woodward. 4 presentations.

*Exploration of T-avoiding elements in Coxeter groups of type F* Fall 2011–Spring 2012  
Students: Ryan Cross, Katie Hills-Kimball, and Christie Quaranta (PSU). 2 presentations.

*T-avoiding permutations in Coxeter groups of types A and B* Fall 2010–Spring 2011  
Students: Joseph Cormier, Zachariah Goldenberg, Jessica Kelly, and Christopher Malbon (PSU). 3 presentations.

*Counting generators in Temperley–Lieb algebras of types A and B* Spring 2010  
Students: Sarah Otis and Leal Rivanis (PSU). 1 presentation.

### Honors & Awards

*MAA Southwest Section Teaching Award* Spring 2016  
Recipient of 2016 MAA Southwest Section Award for Distinguished College or University Teaching of Mathematics. Currently nominated for Haimo Award for Distinguished College or University Teaching of Mathematics.

*University College Faculty Fellow* Fall 2012–Present  
Chosen as a Faculty Fellow of the NAU University College via a selection process. Includes annual stipend.

*Educator of Influence* Fall 2015  
Named by two NAU Golden Axe Award recipients as most influential educator.



- Chair's Award for Research* Spring 2015  
Awarded by chair of Department of Mathematics and Statistics at NAU.
- Provost's Award for Excellence in Undergraduate Inquiry & Creativity* Spring 2014  
Award honors a faculty mentor at NAU who has demonstrated initiative, productivity, and dedication in contributing to the university community in the areas of research, scholarly, and/or creative activities.
- Finalist for NH Excellence in Education Award* Spring 2012  
PSU's sole nominee for this statewide teaching award.
- Distinguished Professor of Mathematics* May 2009 & 2011  
Teaching award determined by mathematics majors at PSU.
- Project NExT Fellow* Fall 2008–Spring 2009  
Mathematical Association of America professional development and mentoring program for new PhDs in mathematics.
- Graduate Part-Time Instructor Teaching Excellence Award* Spring 2008  
University-wide award given to outstanding graduate teaching instructors at CU.
- Burton W. Jones Teaching Excellence Award* May 2007  
Recognizes outstanding accomplishments in teaching by CU grad students in mathematics.
- Thron Fellowship* Summer 2007  
Financial award to support summer research, given to most outstanding graduate student in mathematics at CU.
- Best Should Teach Award* Fall 2006  
Awarded to outstanding Lead Graduate Teachers at CU.
- Honorable Mention for Burton W. Jones Teaching Excellence Award* May 2006  
Recognizes outstanding accomplishments in teaching by CU grad students in mathematics.
- CU Mathematics Department Summer Fellowship* Summer 2006  
Financial award to support summer research.
- Residence Life Academic Teaching Award* Dec 2003  
Awarded to instructors at CU based on nominations from students.
- Finalist for Master Teacher Award* May 2002 & 2003  
Awarded to instructors at FRCC based on nominations from students.
- Mary K. Cabell Award* May 1997  
Awarded to the most outstanding graduating mathematics major at GMU.

## **Presentations Invited**

- Transitioning students from consumers to producers* (opening address) Apr 2016  
ArizMATYC/MAA-Southwest Section, Coconino Community College, Flagstaff, AZ.
- Student presentations in calculus* Jan 2016  
Increasing Student Engagement & Understanding through Active Learning Strategies in Calculus I minicourse, 2016 Joint Math Meetings, Seattle, WA.

- Open problems with monetary rewards* Oct 2014  
2014 NAU High School Math Day, NAU.
- Soup to Nuts: My Approach to IBL* (plenary address) Aug 2014  
2014 IBL Workshop, Portland, OR.
- Inquiry-Based Education in Mathematics: Models, Methods, & Effectiveness* Jul 2014  
Workshop on Innovations in Higher Education Mathematics Teaching, Cardiff University, Cardiff, Wales.
- Tried & True Practices for IBL & Active Learning* Jan 2014  
Project NExT Panel Discussion, 2014 Joint Math Meetings, Baltimore, MD.
- Teaching Strategies for Improving Student Learning* May 2013  
Michigan Project NExT Panel Discussion, 2013 Spring MAA Michigan Section Meeting, Lake Superior State University, Sault Ste. Marie, MI.
- Games on Groups* Apr 2013  
Omaha Area Math Teachers Circle, University of Nebraska at Omaha, Omaha, NE.
- Impartial games for generating groups* Apr 2013  
Cool Math Talks, University of Nebraska at Omaha, Omaha, NE.
- Using IBL as an assessment strategy* Jan 2013  
Project NExT Alternative Assessment Panel Discussion, 2013 Joint Math Meetings, San Diego, CA.
- Inquiry-Based Learning Panel Discussion* Oct 2012  
Indiana MAA Section Meeting, Butler University, Indianapolis, IN.
- Inquiry-Based Learning: What, Why, and How?* Oct 2012  
UA Mathematics Instructional Colloquium, University of Arizona, Tucson, AZ.
- Permutation Puzzles* Feb 2012  
Math Teachers' Circle at University of Nebraska at Omaha, Omaha, NE.
- The Futurama Theorem* Feb 2012  
UNO Mathematics Colloquium, University of Nebraska at Omaha, Omaha, NE.
- The prisoner of Benda and the Futurama Theorem* Nov 2011  
Mathematics Forum, Gordon College, Wenham, MA.
- Technology Sampler* Aug 2010  
Issues for Early Career Mathematicians in Academia, 2010 MathFest, Pittsburgh, PA.
- On an open problem of the symmetric group* Feb 2009  
Mathematics Seminar, Keene State College, Keene, NH.

### Other

- 7 presentations (see webpage for details) Spring 2000, 2008, Fall 2012–Spring 2016  
Mathematics & Statistics Colloquium, NAU.
- 13 presentations (see webpage for details) Fall 2012–Spring 2016  
Algebra, Combinatorics, Geometry, & Topology Seminar, NAU.



- 14 presentations (see webpage for details) Fall 2012–Spring 2016  
Friday Afternoon Mathematics Undergrad Seminar, NAU.
- 3 presentations (see webpage for details) Fall 2013–Spring 2015  
Mathematics and Statistics Teaching Showcase, NAU.
- A guide-on-the-side approach to calculus* Jan 2015  
First-Year Calculus: Fresh Approaches for Jaded Students, 2015 Joint Math Meetings, San Antonio, TX.
- Transitioning students from consumers to producers* Jan 2015  
Teaching Inquiry, 2015 Joint Math Meetings, San Antonio, TX.
- Mathematics as a Creative Endeavor: Is Mathematics Communication?* Sep 2014  
Liberal Studies Town Hall, NAU. Joint with T. Blows (NAU).
- Creating Independent Learners* Aug 2014  
Fall 2014 Tutor Training, NAU. Joint with E. Kennedy (NAU).
- A Pentagon of Assessments* Apr 2014  
12th Annual Assessment Fair, NAU. Joint with B. Beaudrie and B. Boschmans (NAU).
- Lumberjack Mathematics Center Poster* Sep 2013  
Showcase at the President and Provost Speaker Series, NAU. Joint with B. Beaudrie and B. Boschmans (NAU).
- Implementing IBL in an Introduction to Proof Course* Jun 2013  
Legacy of R.L. Moore Conference, Austin, TX.
- Designing Inquiry-Based Learning Experiences* Oct 2012  
Faculty Development Workshop, NAU.
- Inquiry-Based Learning: What, Why, and How?* Oct 2012  
ArizMATYC Conference, Yavapai College, Prescott, AZ.
- Effective and efficient grading for an IBL course* Jun 2012  
Legacy of R.L. Moore Conference, Austin, TX.
- Collaborative peer review between two IBL number theory courses* Jan 2012  
Scholarship of Teaching and Learning in Collegiate Mathematics, 2012 Joint Math Meetings, Boston, MA.
- 3 presentations (see webpage for details) Spring 2010–Fall 2011  
Mathematics Seminar, PSU.
- Diagram algebras as combinatorial tools for exploring Kazhdan–Lusztig theory* Oct 2011  
Dartmouth Combinatorics Seminar, Dartmouth College, Hanover, NH.
- Mendeley: Reference manager meets social networking* Aug 2011  
Faculty Workshop Days, PSU.
- Within  $\epsilon$  of independence: An attempt to produce independent proof-writers via an IBL approach in a real analysis course* Jan 2011  
Getting Students Involved in Writing Proofs, 2011 Joint Math Meetings, New Orleans, LA.

- A diagrammatic representation of the Temperley–Lieb algebra* Apr 2010  
Hudson River Undergraduate Mathematics Conference, Keene State College, Keene, NH.
- Using wikis to enhance collaboration* Apr 2010  
2010 Spotlight on Faculty Using Technology, PSU.
- On the cyclically fully commutative elements of Coxeter groups* Jan 2010  
AMS Session on Discrete Mathematics, 2010 Joint Math Meetings, San Francisco, CA.
- A diagrammatic representation of an affine  $C$  Temperley–Lieb algebra* Jan 2009  
MAA Project NExT-YMN Poster Session, 2009 Joint Math Meetings, Washington, DC.
- Diagram calculus for the Temperley–Lieb algebra* Nov 2008  
MAA Northeastern Section Meeting, Bentley University, Waltham, MA.
- Weak star reducibility in Coxeter groups* Nov 2007  
Algebraic Lie Theory Seminar, CU Boulder.
- 3 presentations (see webpage for details) Fall 2006–Fall 2007  
Slow Pitch Colloquium, CU Boulder.
- Diagram calculus for the Temperley–Lieb algebra* Apr 2007  
Graduate Student Combinatorics Conference, University of Washington, Seattle, WA.
- 10 Things I Wish I Would Have Known Before I Started Teaching* Nov 2006  
Graduate Teacher Program, CU Boulder.
- Introduction to finite reflection groups* Oct 2006  
Coxeter Groups Seminar, CU Boulder.
- A cell complex for configuration space* Apr 2000  
MAA Southwest Section Meeting, Arizona State University, Tempe, AZ.

**Synergistic  
Activities**

- Co-author/editor for Teaching Tidbits* Summer 2016–Present  
*Teaching Tidbits* is a new online column sponsored by the Mathematical Association of America. Column will launch in Fall 2016.
- Guest editor for PRIMUS* Spring 2015–Present  
One of three guest editors for *PRIMUS* Special Issue on Inquiry-Based Learning in First and Second Year Courses. Joint with A. Hodge and T.J. Hitchman.
- Co-author/editor for Math Ed Matters* Spring 2013–Present  
*Math Ed Matters* is an online column sponsored by the Mathematical Association of America. Column explores topics and current events related to undergraduate mathematics education. Joint with A. Hodge.
- Editor for MathBlogging.org* Summer 2013–Present  
[Mathblogging.org](http://mathblogging.org) is devoted to aggregating math-related blogs and news sources across the Internet. My job as editor is to select blog posts to be included in the Editors' Picks list.
- Special Projects Coordinator for Academy of Inquiry-Based Learning* Fall 2012–Present  
Help organize, promote, and run IBL-related events including workshops, special sessions, and conferences. Includes annual stipend.

*IBL Mentor* for Academy of Inquiry-Based Learning Fall 2011–Present  
Mentor for small cohort of mathematics instructors that are new to IBL.

*Facilitator* for IBL Workshops Summers 2013–2016  
The IBL Workshop provides an intensive four-day program for math instructors interested in learning to implement IBL in college-level mathematics courses. A comprehensive follow-up program is also provided after the workshop that includes mentoring, course materials, and continued interaction at upcoming conferences. Funded by NSF.

*Co-organizer* for session on IBL in 1st and 2nd Year Courses Fall 2014–Spring 2015  
2015 Joint Math Meetings, San Antonio, TX. Associated with a special issue of *PRIMUS*.

*Co-organizer* for session on IBL Best Practices Summers 2012–2014  
2014 MathFest, Portland, OR.  
2013 MathFest, Hartford, CT.  
2012 MathFest, University of Wisconsin, Madison, WI.

*Co-organizer & presenter* for UNO IBL Workshop Summer 2012  
Ran three-day workshop at the University of Nebraska at Omaha on nuts and bolts of how to effectively implement an inquiry-based learning approach in mathematics and other STEM fields. Joint with S. Yoshinobu and A. Hodge. Funded by Kelly Foundation, Educational Advancement Foundation, and Haddix Initiatives.

*Co-organizer* of AMS Special Session on Combinatorics of Coxeter groups Spring 2011  
AMS Spring Eastern Sectional Meeting, College of the Holy Cross, Worcester, MA.

## Service

### Professional

*Member*, Mathematical Association of America Open Access Task Force Summer 2016  
*Member*, Mathematical Association of America Social Media Task Force Spring 2016  
*Member*, Editorial Board for *Math Horizons* Spring 2014–Present  
*Volunteer*, Navajo Math Festival at Diné College Spring 2015  
*Member*, Planning Committee of Legacy of R.L. Moore Conference Summer 2013  
*Judge*, JMM Undergraduate Student Poster Session Jan 2012

### Northern Arizona University, Flagstaff, AZ

*Member*, Steering Committee for NASA Space Grant Fall 2015–Present  
*Co-organizer*, ACGT Seminar Fall 2014–Present  
*Faculty Fellow*, University College Fall 2012–Present  
*Member*, ArizMATYC/MAA-Southwest Section Organizing Committee Spring 2016  
*Coordinator*, Friday Afternoon Mathematics Undergraduate Seminar Fall 2015–Spring 2016  
*Coordinator*, NAU Mathematics Undergraduate Research Fall 2015–Spring 2016  
*Faculty Advisor*, NAU Math Club Fall 2015–Spring 2016  
*Member*, Honors Week Committee Fall 2015–Spring 2016  
*Member*, Department Webpage Committee Fall 2015–Spring 2016  
*Member*, Scholarship Annual Review Committee Falls 2014, 2015  
*Member*, Instructor Screening Committee Springs 2013, 2015  
*Co-coordinator*, MAT 136/137 Fall 2014–Spring 2015  
*Member*, Scholarship Committee Fall 2014–Spring 2015  
*Member*, Interns 2 Scholars (I2S) Ranking Committee Fall 2014  
*Member*, LMC Assessment Committee Fall 2012–Summer 2014

<i>Member</i> , Department Graduate Operations Committee	Fall 2013–Spring 2014
<i>Member</i> , Department Assessment Committee	Fall 2012–Spring 2013
<i>Co-organizer</i> , Yavapai County Math Contest	Spring 2001
<i>Member</i> , Lecturer Hiring Committee	Spring 2001
<i>Faculty Advisor</i> , NAU Cycling Club	Fall 2000–Spring 2001
<i>Co-organizer</i> , High School Math Day	Falls 2000, 1999
<i>Member</i> , GTA Training Committee	Fall 2000–Spring 2001

**Plymouth State University**, Plymouth, NH

<i>Organizer</i> , PSU Mathematics Seminars	Spring 2009–Spring 2012
<i>Member</i> , Academic Technology Committee	Fall 2011–Spring 2012
<i>Chair</i> , Online/Blended Learning in Mathematics Policy Committee	Fall 2011–Spring 2012
<i>Member</i> , Learning Technology Online Education Director Hiring Committee	Fall 2011
<i>Member</i> , Academic Technology Advisory Group	Fall 2010–Spring 2011
<i>Member</i> , Contract Faculty Hiring Committee	Summer 2010
<i>Advisor</i> , PSU Cycling Club	Spring 2010–Spring 2012
<i>Co-organizer</i> , 2010 Plymouth Bike/Walk to Work Day	Spring 2010
<i>Coauthor</i> , PSU Carbon Action Plan	Spring 2010
<i>Member</i> , Wellness Works Committee	Fall 2009–Spring 2012
<i>Co-organizer</i> , New Faculty Orientation	Summer 2009
<i>Member</i> , President’s Commission on Environmental Sustainability	Spring 2009–Fall 2011
<i>Member</i> , Mathematics Curriculum Committee	Spring 2009

**University of Colorado**, Boulder, CO

<i>Co-organizer</i> , Workshop on Inquiry-Driven Learning	Spring 2007
<i>Co-organizer</i> , Graduate Student Orientation	Summers 2006–2007

**Front Range Community College**, Boulder, CO

<i>Advisor</i> , STEM Club	Fall 2002–Spring 2003
<i>Co-organizer</i> , $\pi$ Day	Spring 2002
<i>Co-organizer</i> , FRCC Fun Run	Spring 2002