Joanna A. Ellis-Monaghan
Curriculum Vitae

Work:
Department of Mathematics
Saint Michael's College
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Research Areas: Algebraic combinatorics, graph theory, applied combinatorics.

Education:

- University of North Carolina, Chapel Hill, NC, Doctorate in Mathematics, Fall 1995. Advisor: James D. Stasheff. Dissertation: *A unique, universal graph polynomial and its Hopf algebraic properties, with applications to the Martin polynomial*.
- Dartmouth College, Hanover, NH, Fall 1988. Transferred to UNC in good standing.
- University of Vermont, Burlington, VT, Master of Science in Mathematics, Spring 1986.
- Bennington College, Bennington, VT, Bachelor of Arts, Mathematics/Studio Art, Spring 1984.

Employment History:

- *Saint Michael's College*, Mathematics Department, Colchester, VT, July 2002–June 2006, Assistant Professor; July 2006-present, Associate Professor.
- *University of Vermont*, Mathematics Department, Burlington, VT, August 2000–July 2002, Visiting Assistant Professor; August 2007-July 2008, Visiting Associate Professor.
- *Saint Michael's College*, Mathematics Department, Colchester, VT, August 1992–July 2002, Instructor, both full- and part-time.
- *University of Vermont*, Mathematics Department, Burlington, VT, August 1992–July 1997, part-time Lecturer.

Fellowships:

Funded Invited Visiting Fellow, Isaac Newton Institute, Cambridge University, Cambridge, UK, Spring 2008.

Editorial and Advisory Boards:

Editorial Board of PRIMUS: Problems, Resources, and Issues in Undergraduate Mathematics, a quarterly journal devoted to all aspects of teaching undergraduate mathematics, 2006-present.

Maple Academic Advisory Board a board of active and innovative users of Maple CAS technology that advises Maplesoft, Inc., on ways to improve the academic user experience from both teaching and research perspectives, 2008-present.

Publications:

** SMC undergraduate student, #graduate student.*

1. L. Beaudin*, J. Ellis-Monaghan, G. Pangborn, R. Shrock, "A little statistical mechanics for the graph theorist," submitted.
2. J. Ellis-Monaghan, I. Sarmiento, "Isotropic systems and the interlace polynomial," submitted.
3. J. Ellis-Monaghan, C. Merino, "Graph polynomials and their applications I: the Tutte polynomial", invited chapter for *Structural Analysis of Complex Networks*, Matthias Dehmer, ed., in press.
4. J. Ellis-Monaghan, C. Merino, "Graph polynomials and their applications II: interrelations and interpretations", invited chapter for *Structural Analysis of Complex Networks*, Matthias Dehmer, ed., in press.
5. J. Ellis-Monaghan, "Considering the chalkless classroom," PRIMUS, in press.
6. A. Dean, J. Ellis-Monaghan, S. Hamilton*, G. Pangborn, "Unit rectangle visibility graphs," The Electronic Journal of Combinatorics, 15, no. 1 (2008) R79.
7. M. Cox#, J. Ellis-Monaghan, T. Hughes, K. Mondanaro, "Hydrocarbon links in an octet truss," The Journal of Mathematical Chemistry, 43, no. 2 (2008) 874-891.
8. J. Ellis-Monaghan, I. Sarmiento, "Distance hereditary graphs and the interlace polynomial," Combinatorics, Probability and Computing, 16, no.6 (2007) 947-973.
9. D. Archdeacon, P. Bonnington, J. Ellis-Monaghan, "How to exhibit toroidal maps in space," Discrete and Computational Geometry, 38, (2007) 573-594.
10. J. Ellis-Monaghan, P. Gutwin, J. Lewis*, G. Pangborn, "Force-directed floorplanning with flexible blocks," Congressus Numerantium, 178 (2006) 147-159.
11. G. Ashline, J. Ellis-Monaghan, "How high? How fast? How long? Modeling water rocket flight with calculus," PRIMUS XVI, no. 2 (2006), 121-137.
12. J. Ellis-Monaghan, D. Pike, Y. Zou#, "Decycling of Fibonacci cubes," The Australasian Journal of Combinatorics, 35 (2006), 31-40.
13. J. Ellis-Monaghan, L. Traldi, "Parametrized Tutte polynomials of graphs and matroids," Combinatorics, Probability, and Computing, 15 (2006) 835-854.
14. J. Ellis-Monaghan, P. Gutwin, J. Lewis*, G. Pangborn, "Principles of force directed floorplanning," Congressus Numerantium, 175 (2005), 81-96.
15. G. Ashline, J. Ellis-Monaghan, "Credit cards and cars: The mathematics of the American dream, part I," The New Jersey Mathematics Teacher, 63 no. 1 (2005), 16-23.
16. G. Ashline, J. Ellis-Monaghan, "A house of your own: The mathematics of the American dream, part II," The New Jersey Mathematics Teacher, 63 no. 2 (2005), 20-26.
17. A. Daniels*, J. Ellis-Monaghan, "Surreal seashells," The Pi Mu Epsilon Journal, 12 no. 1 (2004), 36.
18. J. Ellis-Monaghan, "Transition polynomials, double covers, and biomolecular computing," Congressus Numerantium, 166 (2004), 181-192.

19. G. Ashline, J. Ellis-Monaghan, “The lottery: A dream come true or a tax on people who are bad at math?” PRIMUS XIV no. 4 (2004), 303-314.
20. D. Archdeacon, J. Ellis-Monaghan, D. Fisher, D. Froncek, P.C.B. Lam, S. Seager, B. Wei, R. Yuster, “Some remarks on domination,” Journal of Graph Theory, 46 no. 3 (2004), 207-210.
21. J. Ellis-Monaghan, “Exploring the Tutte-Martin connection,” Discrete Mathematics, 281 no. 1-3 (2004), 173-187.
22. J. Ellis-Monaghan, “Identities for the circuit partition polynomials, with applications to the diagonal Tutte polynomial,” Advances in Applied Mathematics, 32 no. 1-2, (2004), 188-197.
23. J. Ellis-Monaghan, P. Gutwin, “Graph theoretical problems in next generation chip design,” Congressus Numerantium, 163 (2003), 143-159.
24. G. Ashline A. Brizard, J. Ellis-Monaghan, “Water rockets in flight: Calculus in action,” UMAP/ILAP Modules, 2002-2003: Tools for Teaching, 151-189.
25. J. Ellis-Monaghan, I. Sarmiento, “Generalized transition polynomials,” Congressus Numerantium 155 (2002), 57-69.
26. J. Ellis-Monaghan, I. Sarmiento, “Medial graphs and the Penrose polynomial,” Congressus Numerantium 150 (2001), 211–222.
27. G. Ashline, J. Ellis-Monaghan, “Home sweet home: A financial incentive for the lower level mathematics course” (with George Ashline), PRIMUS XI, no. 1 (2001), 16–26.
28. J. Ellis-Monaghan, “Differentiating the Martin polynomial,” Congressus Numerantium 142 (2000), 173–83.
29. G. Ashline, J. Ellis-Monaghan, “How many people are in your future? Elementary models of population growth,” in Making Meaning: Integrating science through the case study approach to teaching and learning, ed. S. Kuntz et al, McGraw-Hill Primis, 1999, pp. 42–80.
30. G. Ashline, J. Ellis-Monaghan, “How many people are in your future? Elementary models of population growth” (updated version), Case studies in ecology, ed. S. Kuntz et al., accompanying the 1st editions of Manuel Molles’ text Ecology: Concepts and Applications. WCB McGraw-Hill, New York, 1999.
31. G. Ashline, J. Ellis-Monaghan, “Interdisciplinary population projects in a first semester calculus course,” PRIMUS IX (March 1999), 39–55.
32. G. Ashline, J. Ellis-Monaghan, “Microcosm to macrocosm: Population models in biology and demography,” Tools for Teaching, UMAP unit 777 (1999), 39–80.
33. J. Ellis-Monaghan, “Martin polynomial miscellanea,” Congressus Numerantium 137 (1999), 19–31.
34. J. Ellis-Monaghan, “New results for the Martin polynomial,” Journal of Combinatorial Theory, series B 74 (1998), 326–52.

Selected External Grants and Awards :

(PI unless otherwise noted.)

- Vermont Genetics Network/INBRE Baccalaureate Funding, Project #5, September 2008-May 2009.
- NSF CSTEM award for computer science and mathematics scholarships (G. Pangborn PI), June 2008-May 2013.
- Vermont Genetics Network/INBRE Baccalaureate Funding, Project #5, September 2007-May 2008.
- National Security Agency Standard Grant, Fiscal Years 2007 and 2008.
- Vermont Genetics Network/INBRE Baccalaureate Funding, Project #5, June 2006-May 2007.
- NASA—Vermont Space Grant Consortium Student Mentoring Grant (G. Pangborn PI), June 2006-May 2007.
- Vermont EPSCoR Netlist Summer Support (G. Pangborn PI), Summer 2006.
- Cadence Design Systems Undergraduate Research Support for Netlist Project, Spring 2006-Summer 2006.
- IBM/Cadence Design Systems Collaborator Support for Student Mentoring in Netlist Project, Fall 2005.
- Vermont EPSCoR Netlist Summer Support, Summer 2005.
- Vermont Genetics Network/INBRE Baccalaureate Funding, Project #5, June 2005–May 2006.
- NASA—Vermont Space Grant Consortium Student Mentoring Grant, Spring 2005.
- AWM Travel Grant to attend the Thirty-Sixth Southeastern International Conference on Combinatorics, Graph Theory, and Computing, FAU, Boca Raton, FL, March 2005.
- IBM Collaborator Support for Student Mentoring in Netlist Project, Fall 2004.
- Vermont EPSCoR summer research support, Summer 2004.
- Vermont Genetics Network/BRIN summer research support, Summer 2004.
- Vermont Genetics Network/BRIN continued research support, academic year 2003-2004.
- Maplet Toolbox Grant from Waterloo Maple, Inc., Summer 2003.
- Vermont Genetics Network/BRIN summer research support, Summer 2003.
- Maplet Development Grant from Waterloo Maple, Inc., Spring 2003.
- AWM Travel Grant to attend the Thirty-Third Southeastern International Conference on Combinatorics, Graph Theory, and Computing, FAU, Boca Raton, FL, March 2002.

Student Publications:

- L. Beaudin, "A review of the Potts model: its relation to the Tutte polynomial and its application to complex experiments," *The Rose-Hulman Undergraduate Math Journal,* **8** no. 1, 2007. Co-advised with G. Pangborn.
- A. Austin, "The circuit partition polynomial, with applications and relation to the Tutte and interlace polynomials," *The Rose-Hulman Undergraduate Math Journal,* **8** no. 2, 2007.
- J. Kaptcianos, "A graph theory approach to DNA fragment assembly," *American Journal of Undergraduate Research,* **7** no.1, 2008.

UVM Masters Students (co-advisor/thesis committee):

- Jessica Scheld, Masters co-advisor and Masters Thesis Committee, University of Vermont, Spring 2007.
- Dan Nardi, Masters co-advisor and Masters Thesis Committee, University of Vermont, Fall 2003.
- Patricia Fogarty (SMC alumna), Masters Thesis Committee, University of Vermont, Spring 2003.

Industry Collaborations:

Netlist Partitions: seeking tools from graph theory and geometric combinatorics to find a wiring layout on a chip within the space and timing parameters of the design, with J. Cohn (IBM), A. Dean (Skidmore), P. Gutwin (Cadence Design Systems), J. Lewis (SMC), and G. Pangborn (SMC) Spring 2002–Fall 2006.

Geometric Pattern Recognition: using a graph-theoretical approach to find and implement an algorithm for identifying specific small structures on a large chip layout, with J. Cohn (IBM), Dan Nardi (UVM), and R. Snapp (UVM), Fall 2001–Summer 2005.

Method for Defining a Set of Circuit Library Elements: developed heuristics using graph-theory techniques to find representative elements given a large set of elements with various parameters, with D. Hathaway (IBM) and A. Venkataraman (IBM), 2001.

Patent Disclosures:

Pattern Recognition Algorithm for locating substructures in rectilinear designs (with J. Cohn (IBM), D. Nardi (UVM), and R. Snapp (UVM)), Patent Disclosure Draft (UVM internal), May 2003.

Method for defining a set of circuit library elements (with D. Hathaway and A. Venkataraman (IBM)), Patent Disclosure Draft (IBM internal), September 2001.

Software Development:

** SMC undergraduate student.*

J. Ellis-Monaghan, P. Gutwin, C. Jennings*, J. Lewis*, G. Pangborn, Developed a C++ program for computer chip-layout problems adapted to standard industry interface through OpenAccess, 2006-present.

J. Ellis-Monaghan, P. Gutwin, J. Lewis*, G. Pangborn, Developed a Java program for addressing various micro-electronics industry computer chip-layout problems such as floorplanning and automating small problematic configurations, 2004-2006.

P. Bodkin*, J. Ellis-Monaghan, W. Sherman*, "Graph Analysis and Polynomial Maplet," published on-line at MapleApps, Summer 2004.

J. Ellis-Monaghan, L. McLane*, Maplet toolbox of development code for Maplet authors and tutoring guides for novice users. Developed for Waterloo Maple, Inc, Summer 2003.

J. Ellis-Monaghan, C. Kriwox*, L. McLane*, 18 Maplets running on a Java platform for interactive graphical exploration of vector calculus concepts. Developed for Waterloo Maple, Inc, and published on MapleApps, Spring 2003.

Selected Recent Invited Presentations:

- "The Tutte polynomial and Potts model in statistical mechanics," SUNY

Binghamton, November, 2008.

- "The increasingly popular Potts model, or, a graph theorist does physics," plenary speaker, WIMIN conference, Smith College, Northampton, MA, September 2008.
- "Digraph polynomials," Summer Combo in Vermont Miniconference, Colchester, VT, July 2008.
- "Graph theory designs for DNA nanostructures," REU program, SUNY Pottsdam, July 2008.
- "Multivariable Tutte and Transition Polynomials," Combinatorics and Statistical Mechanics Programme, Isaac Newton Institute, Cambridge University, UK, April, 2008.
- "Graph theory and DNA nanostructures," Smith College, Northampton, MA, October, 2007.
- "Graph theory designs for DNA nanostructures," Villanova University, Philadelphia, PA, October 2007.
- "Finding minimal tile and bond-edge types for self-assembling DNA graphs …with students!" special paper session on graph theory topics for undergraduate research, MathFest, San Jose, August 2007.
- "From Potts to Tutte and back again—a graph theoretical view of statistical mechanics, with applications" USF, Tampa, FL, January 2007.
- "From Potts to Tutte and back again—a graph theoretical view of statistical mechanics," UPenn, Philadelphia, PA, November 2006.
- "Network Applications for Math Enrichment," Essex High School In-service workshop, March 2006.
- "A Duality Relation for the Topological Tutte Polynomial," American Mathematical Society Meeting Special Session on Invariants of Graphs and Matroids, Bard College, NY, October 2005.
- "Weak Tutte Functions," workshop on Tutte Polynomials and Related Topics, Centre de Recerca Matematica, Bellaterra, Spain, October 2005.
- "Graph models for DNA structures," Vermont Genetics Network Workshop, August 2005.
- "Properties of the interlace polynomial," American Mathematical Society Meeting Special Session on Graph Polynomials, Pittsburgh, November 2004.
- "Graph models from the Kevin Bacon game to biomolecular computing and beyond," Skidmore College, October 2004.
- "Relations for generalized transition polynomials," USF, Tampa, FL, March 2004.
- "Generalized transition polynomials and DNA sequencing," CINEVESTAV, Mexico, January 2004.

Recent Grant-Supported Student Mentoring and Research:

- Andrea Austin, Eulerian Cycles and Graph Polynomials, National Security Agency, Summer 2007.
- Jonathan Kaptcianos, The Eulerian Superpath Problem and DNA Fragment Assembly, National Security Agency, Summer 2007.
- Andrea Austin, Eulerian Cycles and Graph Polynomials, Vermont Genetics Network,

Spring 2007.

- Jonathan Kaptcianos, The Eulerian Superpath Problem and DNA Fragment Assembly, Vermont Genetics Network, Spring 2007.
- Sarah Hamilton, Developing Graph Theory Tools for Netlist Layout, (co-advised with G. Pangborn), Vermont Space Grant Student Mentoring Program, Summer 2006, AY 2006-2007.
- Laura Beaudin, Applications of the Potts Model, Vermont Genetics Network, Summer 2006, AY 2006-2007.
- David Miller, Minimum pot sets for DNA self-assembly. Vermont Genetics Network, Spring/Summer 2006, AY 2006-2007.
- Chris Jennings, Graph theoretical approaches to netlist layout, Vermont EPSCoR, (co-advised with G. Pangborn), Summer 2006.
- Jamey Lewis, Graph theoretical techniques in netlist layout. Cadence Design Systems Grant, Spring/Summer 2006.
- Jess Scheld, DNA sequencing and Euler Circuits. Vermont Genetics Network, Spring/Summer 2006.
- Sarah Walker, DNA nanostructures, Vermont Genetics Network, AY 2005-2006.
- Mary Cox, Carbon knots and the Tutte polynomial, Vermont Genetics Network, AY 2005-2006.
- Jamey Lewis, Graph theoretical techniques in netlist layout. Industry Collaborator and FDC Support, Fall 2005.
- Mary Cox, Marisa Debowsky, Jessica Scheld, Graph polynomials and DNA structures, Vermont Genetics Network, Summer 2005.
- Jamey Lewis, Graph theoretical techniques for netlist layout. Vermont EPSCoR, Summer 2005.
- Jamey Lewis, Spring embedder driven netlist layout tools. Vermont Space Grant Student Mentoring Program, Spring 2005.
- Jamey Lewis, Graph theoretical techniques for netlist layout. Academic Programs and FDC, Fall 2004.
- Mary Cox and Marisa Debowsky (UVM graduate students), Applications of transition polynomials to DNA analysis. Vermont Genetics Network, Summer 2004.
- Jamey Lewis, Graph theoretical techniques in netlist layout. Vermont EPSCoR, jointly with industry (Cadence) and G. Pangborn (SMC computer science) Summer/Fall 2004.
- Patricia Bodkin and Whitney Sherman, Computation of graph polynomials for DNA sequencing. Vermont Genetics Network/BRIN, 2003-2004.
- Patricia Bodkin, Sarah Graham and Whitney Sherman, Computation of graph polynomials for DNA sequencing. Vermont Genetics Network/BRIN, Summer 2003.
- Laura McLane, Maplet Toolbox, tutorial and content website supported by a grant from Waterloo Maple, Inc., Summer 2003.
- Laura McLane and Colin Kriwox, Maplet development, Maple interface tools supported by a grant from Waterloo Maple, Inc., Spring 2003.
- Laura McLane, Graphical-layout, independent study, Fall 2002.
- Dan Nardi, pattern-recognition independent study, joint work with UVM Computer Science Department and IBM, Spring 2002–Summer 2003.
- Angela Lavoie, graph-theory independent study, Spring 2000.

Recent Student Presentations:

MAA Northeastern Section Student Talks

- Eva Ellis-Monaghan, "The Potts and Ising Models of Statistical Mechanics," Summer 2008

SMC/UVM Joint Combinatorics Seminar

- Jamey Lewis, "Force-directed floorplaning with flexible blocks," Spring 2006.

Vermont Genetics Network Workshop

- Nick Bruno, Akie Hashimoto, Paul Jarvis, "Mathematical models for building graphical complexes from DNA ," Summer 2008.
- Andrea Austin, "The circuit partition polynomial and relation to the Tutte polynomial," Spring 2007.
- Laura Beaudin, "The Potts Model," Spring 2007.
- Jonathan Kaptcianos, "Graph theory aiding DNA fragment assembly," Spring 2007.
- David Miller, "Efficient DNA construction using minimization," Spring 2007.
- Mary Cox, "Hydrocarbon knots in the octet truss," Summer 2006.
- David Miller, "Minimal tile types for a given graph," Summer 2006.
- Laura Beaudin, "Applications of the Potts Model," Summer 2006.
- Mary Cox, "Alpha-regular stick numbers for carbon complex knots," Spring, 2006.
- Jessica Scheld, "DNA sequencing and Eulerian circuits," Spring, 2006.
- Sarah Walker, "DNA nanotechnology," Spring, 2006.
- Mary Cox, "Knots and stuck unknots in hydrocarbon chains," Summer 2005.
- Marisa Debowsky, "Biomolecular computing and topological graph theory," Summer 2005.
- Jessica Scheld, "DNA sequencing and Eulerian circuits," Summer 2005.

Vermont EPSCoR People, Ideas, and Tools Conference

- Jamey Lewis, "Graph theoretical techniques for netlist layout," Summer 2005.

NASA Goddard Space Flight Center

- Sarah Hamilton, "Unit rectangle visibility graphs," Spring 2007.
- Jamey Lewis, "Further adaptations of force-directed layout techniques for computer chip design," Spring 2005.

Vermont Academy of Arts and Sciences

- Jamey Lewis, "A spring embedding program for netlist layout," Spring 2004.
- Paul Frail, "Atomic orbital modeling," (chemistry presentation using Maple to model electron orbits), April 1999.

Parents' Weekend

- Sarah Graham, "Instant insanity game," Spring 2003.
- Whitney Sherman, "Graphs and cycles," Spring 2003.

SMC Chemistry Seminar

- Jonathan Kaptcianos, "The Eulerian superpath problem and DNA fragment assembly," Summer 2007.

Senior Seminar

- David Miller, "Latin Squares," Spring 2007.
- Nathan Rounds, "The Mathematics within Casino Games," Spring 2007.
- Patrick Asaba, "Origami Mathematics," Spring 2006.
- Amanda Dargie, "The Four Color Theorem," Spring 2005.
- Cody Tiegens, "Fibonacci Numbers and Tiling with Dominoes," Spring 2005.
- Kenneth Bopf, "Crystalographic Groups," Spring 2004.
- Amanda Daniels, "Sea Shell Models," Spring 2004.
- Whitney Sherman, "The Kauffman Bracket in Knot Theory," Spring 2004.
- Michael Duquette, "Graph Coloring and the Five Color Theorem," Spring 2003.
- Colin Kriwox, "Codes: Error Detection and Correction," Spring 2003.
- Jennifer Hartell, "The Fibonacci Numbers," Spring 1999.
- Michael Bobela, "Scheduling Theory," Spring 1999.

Hudson River Undergraduate Mathematics Conference

- Akie Hashimoto, "Building Graphical Complexes from DNA," (co-advised with G. Pangborn), Spring 2008.
- Jonathan Kaptcianos, "Eulerian Circuits, de Bruijn Graphs, and DNA Fragment Assembly," Spring 2008.
- Andrea Austin, "The Circuit Partition Polynomial and Applications to the Tutte Polynomial," Spring 2007.
- Laura Beaudin, "Review of the Potts model," Spring 2007.
- David Miller, "Minimal Tile/Edge types for a given graph," Spring 2007.
- Sarah Hamilton, "Unit rectangle visibility graphs," (interdisciplinary advisors: A. Dean (Skidmore), J. Ellis-Monaghan (Mathematics), and G. Pangborn (Computer Science)), Spring 2007.
- Laura Beaudin, "Review of the Potts model," Spring 2007.
- Sarah Hamilton, "Unit Rectangle Visibility Graphs," Spring 2007.
- Jonathan Kaptcianos, "Graph Theory aiding DNA Fragment Assembly," Spring 2007.
- David Miller, "Latin Squares: A useful and entertaining piece of math," Spring 2007.
- David Miller, "Minimal Tile/Edge Types for a Given Graph," Spring 2007.
- Jamey Lewis, "Floorplanning with Force-Directed Graphing Using Flexible Blocks" (Interdisciplinary advisors: J. Ellis-Monaghan (Mathematics) and G. Pangborn (Computer Science), P. Gutwin (Cadence)), Spring 2006.
- Sarah Walker, "Determination of Strand Numbers for DNA Nanoconstructs" (Interdisciplinary advisors: J. Ellis-Monaghan (Mathematics), G. Pangborn (Computer Science), D. Green and M. Lubkowitz (Biology)), Spring 2006.
- Ben Epstein, " Chaos and the Motion of a Driven Pendulm System" (Interdisciplinary

advisors: A. Brizard (Physics) and J. Ellis-Monaghan (Mathematics)), Spring 2005.

- Jamey Lewis, "Adaptations of Force-Directed Layout Techniques for Computer Chip Design" (Interdisciplinary advisors: J. Ellis-Monaghan (Mathematics) and G. Pangborn (Computer Science), P. Gutwin (Cadence)), Spring 2005.
- Patricia Bodkin and Whitney Sherman (joint talk), "An Introduction to the Tutte Polynomial," Spring 2004.
- Patricia Bodkin, "The Pott's Model Partition Function, an Application of the Tutte Polynomial," Spring 2004.
- Jamey Lewis, "Applications of Force-Directed Graphing in Computer Chip Design," Spring 2004.
- Whitney Sherman, "The Kauffman Bracket as an Evaluation of the Tutte Polynomial," Spring 2004.
- Natalie Skall, "Group Theory Applied to the Warlpiri Tribe is Proved to Deter Incest," Spring 2004.
- Michael White, "Knots and Stuck Unknots: Hydrocarbon Chains?" Spring 2004.
- Aaron Desrochers, "Applications of Graphs in the Study of Island Networks," Spring 2003.
- Michael Duquette, "Progressively Finite Games with Emphasis on the Game of Nim," Spring 2003.
- Colin Kriwox, "Among the Primes," Spring 2003.
- Laura McLane, "Graphic Tool for Computer Chip Layout," Spring 2003
- Angela Lavoie, "Did You Say It Was a Snark?" Spring 2000.
- Sarah Menard, "Graph Coloring," Spring 1999.

MathFest

- Brian Adams, "Clap to it! An Examination of Steve Reich's 'Clapping Music,'" MathFest 1999, Providence, RI (cash award for best presentation in the session).

Service:

- Faculty Welfare Committee, AY 2008-present.
- Vermont State Mathematics Coalition, Expanding Horizons Speaker, Fall 2002–present.
- NSF ANTC program graph theory panel, December, 2007.
- MAA-NES Spring 2008 meeting program organizer, AY 2007-2008.
- Liaison to Technology Steering Committee, Academic Years 2005-2006.
- Honors Committee, Academic Years 2004-2006.
- Jeanmarie Renovation Committee (Appointed by Chair), 2004-2006.
- St. Anne's Shrine Committee, Academic Year 2004-2005.
- Pontigny Society Advisory Board, Academic Year 2004-2005.
- Pension Committee, Academic Years 2003-2006.
- Art Committee, Academic Years 2003-2005.
- Anime Club advisor, 2003-2005.
- Educational Technology Committee, Saint Michael's College, 2002-2003 and 2005-2007.
- Organizer (with Dan Archdeacon) for "Discrete Methods in Geometry," a special session for the MAA summer meetings, MathFest 2002, Burlington, VT.
- Local Arrangements Committee for the MAA summer meetings, MathFest 2002,

Burlington, VT.

- Joint Saint Michael's College/University of Vermont Applied Combinatorics Seminar Organizer, 2000–present.
- Faculty Advisor, Deaf Awareness House, Saint Michael's College, 1999–2000.
- Lounge Committee, Saint Michael's College, Fall 1998–Spring 2000, Fall 2002–Fall 2003.

Reviewing and Refereeing:

Reviewer for Mathematical Reviews.

Referee for the following journals:

- *Discrete Mathematics.*
- *The Electronic Journal of Combinatorics.*
- *Graph Drawing 2003.*
- *The International Journal of Mathematics and Mathematical Sciences.*
- *The Journal of Combinatorial Theory, Series B.*
- *The Journal of Differential Geometry and Its Applications.*
- *The Journal of Graph Theory.*
- *The Journal of Pure and Applied Algebra.*
- *Journal of Statistical Physics*
- *The London Mathematical Society.*
- *PRIMUS.*
- *Structural Combinatorics* (special volume of *Discrete Mathematics*).

Professional Memberships:

- American Mathematical Society.
- Association for Women in Mathematics.
- Mathematical Association of America.
- Society for Industrial and Applied Mathematics.