

Kirsten Hogenson

Curriculum Vitae

Department of Mathematics and Statistics
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- Research interests** Graph theory; extremal and probabilistic combinatorics; partially-ordered sets; combinatorial game theory; combinatorial matrix theory.
- Education**
- Iowa State University* Ph.D. in Mathematics, May 2016
Advisor: Ryan R. Martin
Dissertation: Random and deterministic versions of extremal poset problems
- University of North Dakota* B.S. in Mathematics, May 2010
Minor: Computer science
Honors: Summa Cum Laude, Phi Beta Kappa
- Employment**
- Assistant Professor, Department of Mathematics and Statistics, Skidmore College, August 2020 – present
- Responsibilities include teaching introductory and advanced mathematics courses, advising undergraduates, and conducting research.
- Visiting Assistant Professor, Department of Mathematics and Computer Science, Colorado College, August 2016 – May 2020
- Responsibilities included teaching introductory and advanced mathematics courses and advising mathematics capstone projects.
- Lead Teaching Assistant, Department of Mathematics, Iowa State University, August 2014 – May 2015
- Assigned teaching and grading jobs to all graduate teaching assistants.
 - Trained and mentored first-year graduate teaching assistants.
- Teaching Assistant, Department of Mathematics, Iowa State University, August 2010 – May 2016
- Responsibilities included teaching introductory mathematics courses, leading recitation sections, and working in help rooms.
- Financial support**
- Faculty Student Collaborative Research Grant (Colorado College):
Push to the finish: Investigating winning strategies in variants of the board game Abalone. May 20, 2019 – June 21, 2019. (\$4,031)
- Institute for Mathematics and its Applications (IMA) Thematic Year on Discrete Structures: Scholar in-residence. February 1-28, 2015. (\$1,686)
- Awards**
- Aggie Ho Teaching Award, Iowa State University, Fall 2015.
Teaching Excellence Award, Iowa State University, Fall 2013.

Teaching experience At Skidmore College:

Semester	Course	Role
Sp 2022	MA 110 Mathematics Toolkit	Instructor
Sp 2022	MA 111 Calculus 1	Instructor
Sp 2022	MA 215 Intro to Proof	Instructor
F 2021	MA 215 Intro to Proof	Instructor
F 2021	MA 302 Graph Theory	Instructor
Sp 2021	MA 110 Mathematics Toolkit	Hybrid Instructor
Sp 2021	MA 275H Mathematics Research – Topic: Optimal solutions for static Mastermind	Advisor
Sp 2021	MA 303 Intro to Analysis	Hybrid Instructor
F 2020/Sp 21	MA 381 and MA 382 Senior Thesis – Topic: Equitable list colorings of prism graphs	Advisor
F 2020	MS 104 Intro to Statistics	Hybrid Instructor
F 2020	MA 215 Intro to Proof	Hybrid Instructor

At Colorado College:

Semester	Course	Role
Sp 2020	MA 129 Calculus 2	Online Instructor
Sp 2020	MA 204 Calculus 3	Instructor
Sp 2020	MA 325 Graph Theory	Online Instructor
F 2019	MA 126 Calculus 1	Instructor
F 2019	MA 201 Discrete Mathematics	Instructor
F 2019	MA 499 Senior Capstone Project – Topic: On dispersable book embeddings of Moore graphs	Advisor
Sp 2019	MA 126 Calculus 1	Instructor
Sp 2019	MA 325 Graph Theory	Instructor
F 2018	MA 117 Probability and Statistics	Instructor
F 2018	MA 126 Calculus 1	Instructor
F 2018	MA 201 Discrete Mathematics	Instructor
F 2018	MA 499 Senior Capstone Project – Topic: Maximum upward and downward closed P-free families	Advisor
Sum 2018	MA 126 Calculus 1	Instructor
Sp 2018	MA 117 Probability and Statistics	Instructor

Teaching experience continued

Sp 2018	MA 117 Probability and Statistics	Instructor
Sp 2018	MA 201 Discrete Mathematics	Instructor
Sp 2018	MA 228 Proof-writing Seminar	Co-Instructor
Sp 2018	MA 255 Independent Study (Undergraduate Research Project) – Topic: Generalizing the game SET	Instructor and Advisor
Sp 2018	MA 499 Senior Capstone Project – Topic: Shut The Box game strategy analysis	Advisor
F 2017	MA 220 Linear Algebra	Instructor
F 2017	MA 325 Graph Theory	Instructor
Sp 2017	MA 204 Calculus 3	Instructor
Sp 2017	MA 220 Linear Algebra	Instructor
Sp 2017	MA 251 Number Theory	Instructor
F 2016	MA 129 Calculus 2	Instructor
F 2016	MA 129 Calculus 2	Instructor
F 2016	MA 220 Linear Algebra	Co-Instructor

At Iowa State University:

Semester	Course	Role
F 2015	MATH 166 Calculus II	Instructor
Sum 2015	MATH 143X Prep for Calculus	Instructor
F 2014	MATH 010 High School Algebra	Instructor
Sp 2014	MATH 143X Prep for Calculus	Recitation Instructor
F 2013	MATH 143X Prep for Calculus	Recitation Instructor
F 2012	MATH 165 Calculus I	Recitation Instructor
Sp 2012	MATH 165 Calculus I	Instructor
Sp 2011	MATH 165 Calculus I	Recitation Instructor
F 2010	MATH 165 Calculus I	Recitation Instructor

Publications

J. Gutstadt, K. Hogenson and J. Koerner. Solving Abalone on small boards, in progress.

K. Hogenson, D. Johnston and S. O’Hara. Equitable choosability of prism graphs, in progress.

G. Araujo-Pardo, Z. Berikkyzy, J. Faudree, K. Hogenson, R. Kirsch, L. Lesniak and J. McDonald. Finding long cycles in balanced tripartite graphs: A first step. *Research trends in graph theory and applications*, 1-10, Assoc. Women Math. Ser., 25, Springer, Cham, ©2021.

**Publications
continued**

J. Fallon, K. Hogenson, L. Keough, M. Lomeli, M. Schaefer and P. Soberón. A note on the maximum rectilinear crossing number of spiders. *J. Combin. Math. Combin. Comput.*, 113 (2020), 127-139.

T.H. McNicholl, K. Frank, K. Hogenson, J. Roat and M.P. Carlson. Improving student success and supporting student meaning-making in large-lecture precalculus classes, *PRIMUS*, 31 (2020), no. 7, 792-810.

K. Hogenson, R.R. Martin and Y. Zhao. Tiling tripartite graphs with 3-colorable graphs: The extreme case, *Graphs Combin.*, 34 (2018), no. 5, 1049-1075.

Z. Berikkyzy, C. Cox, M. Dairyko, K. Hogenson, M. Kumbhat, B. Lidický, K. Messerschmidt, K. Moss, K. Nowak, K. Palmowski and D. Stolee. (4,2)-choosability of planar graphs with forbidden substructures, *Graphs Combin.* 33 (2017), no. 4, 751-787.

S. Butler, C. Erickson, L. Hogben, K. Hogenson, L. Kramer, J. C.-H. Lin, R. R. Martin, D. Stolee, N. Warnberg and M. Young. Rainbow arithmetic progressions, *J. Comb.* 7 (2016), no. 4, 595-626.

K. Hogenson, S. Negaard and R. J. Zerr. Matrix sequences associated with the Ducci map and the mediant construction of the rationals. *Linear Algebra Appl.* 437 (2012), no. 1, 285-293.

E. Almodovar, L. DeLoss, L. Hogben, K. Hogenson, K. Murphy, T. Peters and C. A. Ramirez. Minimum rank, maximum nullity and zero forcing number for selected graph families. *Involve* 3 (2010), no. 4, 371-392.

**Professional
development and
training**

Faculty Success Program, May 15-August 6, 2022. Program to help tenure-line faculty with the skills necessary to increase research and writing productivity while maintaining a healthy work-life balance. Organized remotely by the National Center for Faculty Development & Diversity (NCFDD).

Mathematical Association of America (MAA) Project NExT Workshop, August 3-6, 2021. Workshop for new mathematics faculty with focus on active learning; balancing teaching, research, and service; and promoting equity. Directed by Dr. David Kung (St. Mary's College of Maryland). Conducted virtually as part of MAA MathFest.

MAA Project NExT Workshop, January 6-9, 2021. Directed by Dr. David Kung. Conducted virtually as part of American Mathematical Society (AMS)/MAA Joint Mathematics Meetings.

MAA Project NExT Workshop, July 27-31, 2020. Directed by Dr. David Kung. Conducted virtually as part of MAA MathFest.

Toward a Daily Anti-racist Agenda, July 30, 2019. Faculty and staff workshop on inclusion, equity and antiracist practices in a university setting directed by Dr. Paul Buckley (Colorado College Butler Center). Colorado College, Colorado Springs, CO.

Professional development and training continued

Start Teaching Statistics Using R and RStudio, January 16-17, 2019. MAA Minicourse directed by Dr. Randall Pruim (Calvin College) and Dr. Shonda Kuiper (Grinnell College). AMS/MAA Joint Mathematics Meetings, Baltimore, MD.

Good to Great: The Journey to Inclusion at CC, August 15-16, 2018. Faculty workshop on diversity and inclusion practices conducted by Dr. Paul Buckley (Colorado College Butler Center). Colorado College, Colorado Springs, CO.

Directing Undergraduate Research, January 11, 2018. MAA Minicourse directed by Dr. Aparna Higgins (University of Dayton). AMS/MAA Joint Mathematics Meetings, San Diego, CA.

Pathways to Precalculus, Summer 2013. Instructor workshop on inquiry-oriented precalculus teaching strategies conducted by Dr. Marilyn Carlson (Arizona State University). Iowa State University, Ames, IA. (Pathways Certification awarded September 2015.)

Pearson MyLabsPlus administrator training, Fall 2012. Denver, CO.

Invited talks

“Equitable list colorings of prism graphs,” October 28, 2021. Special Session on Women in Graph Theory, Society for Advancing Chicanos/Hispanics & Native Americans in Science (SACNAS) National Diversity in STEM (NDiSTEM) Digital Conference, online.

“An edge condition for long cycles in balanced tripartite graphs,” July 20, 2021. Minisymposium on Women in Graph Theory, Society for Industrial and Applied Mathematics (SIAM) Conference on Discrete Mathematics, online.

“On the maximum rectilinear crossing numbers of spiders,” November 9, 2019. Special Session on Graph Theory, AMS Fall Western Section Meeting, University of California Riverside, Riverside, CA.

“On the maximum rectilinear crossing numbers of spiders,” January 18, 2019. Special Session on If You Build It They Will Come: Presentations by scholars in the National Alliance for Doctoral Studies in the Mathematical Sciences, AMS/MAA Joint Mathematics Meetings, Baltimore, MD.

“A random version of the r-fork-free theorem,” June 4, 2018. Minisymposium on Combinatorics of Partially Ordered Sets, SIAM Conference on Discrete Mathematics, University of Colorado Denver, Denver, CO.

“(4,2)-choosability of planar graphs with forbidden structures,” October 8, 2016. Special Session on Recent Advances in Structural and Extremal Graph Theory, AMS Fall Western Section Meeting, University of Denver, Denver, CO.

“Transitioning to a conceptually-focused precalculus program,” June 20, 2016. MAA Conference on Precalculus to Calculus: Insights and Innovations, University of Saint Thomas, St Paul, MN.

**Invited talks
continued**

“A random version of the r -fork-free theorem,” April 16, 2016. Special Session on Probabilistic and Extremal Combinatorics, AMS Spring Central Section Meeting, North Dakota State University, Fargo, ND.

“Zero forcing number on the counterprism of graphs,” January 6, 2016. Special Session on Research from the 2014 and 2015 Rocky Mountain-Great Plains Graduate Research Workshop in Combinatorics, AMS/MAA Joint Mathematics Meetings, Seattle, WA.

“Precalculus reform at Iowa State University,” October 22, 2014. Iowa Council of Teachers of Mathematics-Iowa Science Teaching Section Math and Science Conference, Iowa State University, Ames, IA.

“Tiling tripartite graphs with 3-colorable graphs: The extreme case,” September 20, 2014. Special Session on Problem Solving in Extremal Combinatorics and Combinatorial Geometry, AMS Fall Central Section Meeting, University of Wisconsin-Eau Claire, Eau Claire, WI.

Contributed talks

“Cryptanalysis of simple substitution ciphers,” September 24, 2021. Mathematics and Statistics Departmental Seminar, Skidmore College, Saratoga Springs, NY.

“Math Morsel: How to win at Nim,” April 20, 2021. Pi Mu Epsilon Induction Ceremony, Skidmore College, Saratoga Springs, NY.

“Finding long cycles in multipartite graphs,” October 25, 2019. Fearless Friday Seminar, Colorado College, Colorado Springs, CO.

“Graph drawings with many crossings,” October 27, 2017. Fearless Friday Seminar, Colorado College, Colorado Springs, CO.

“A random version of the r -fork-free theorem,” January 25, 2016. Discrete Mathematics Seminar, University of Colorado Denver, Denver, CO.

“A random version of the r -fork-free theorem,” January 8, 2016. Association for Women in Mathematics (AWM) Workshop Poster Session and Reception, AMS/MAA Joint Mathematics Meetings, Seattle, WA.

“A random version of the r -fork-free theorem,” November 17, 2015. Discrete Mathematics Seminar, Iowa State University, Ames, IA.

“Tiling tripartite graphs with 3-colorable graphs: The extreme case,” September 23, 2014. Discrete Mathematics Seminar, Iowa State University, Ames, IA.

“Minimum Ranks of Ciclos and Estrellas Graph Families,” January 15, 2010. MAA Poster Session on Research by Undergraduate Students, AMS/MAA Joint Mathematics Meetings, San Francisco, CA.

- Contributed talks continued** “Minimum Ranks of Ciclos and Estrellas Graph Families,” October 24, 2009. MAA North Central Section Meeting, University of North Dakota, Grand Forks, ND.
- “A characterization of the minimum rank of the Ciclos and Estrellas graph families,” July 30, 2009. Alliance Research Symposium, University of Iowa, Iowa City, IA.
- Research Workshops** Workshop for Women in Graph Theory and Applications, research workshop hosted by IMA, August 19-23, 2019.
- Beyond Planarity: Crossing Numbers of Graphs, part of AMS Mathematics Research Communities, Snowbird Resort, UT, June 11-17, 2017.
- Rocky Mountain-Great Plains Graduate Research Workshop in Combinatorics, hosted by Iowa State University, Ames, IA, June 1-12, 2015.
- Rocky Mountain-Great Plains Graduate Research Workshop in Combinatorics, hosted jointly by University of Denver and University of Colorado Denver, Denver, CO, July 28-August 8, 2014.
- Nebraska IMMERSE pre-graduate program, hosted by University of Nebraska Lincoln, Lincoln, NE, Summer 2011.
- Other meetings attended** Discrete Math Day, Colgate University, Hamilton, NY, April 23, 2022.
- 28th Cumberland Conference on Combinatorics, Graph Theory & Computing, University of South Carolina, Columbia, SC, May 15-17, 2015.
- Convexity and Optimization: Theory and Applications, part of IMA Thematic Year on Discrete Structures, Minneapolis, MN, February 23-27, 2015.
- Probabilistic and Extremal Combinatorics, part of IMA Thematic Year on Discrete Structures, Minneapolis, MN, September 8-12, 2014.
- SIAM Conference on Discrete Mathematics, Hyatt Regency Minneapolis, Minneapolis, MN, June 16-19, 2014.
- AMS Spring Central Section Meeting, Iowa State University, Ames, IA, April 27-28, 2013.
- Midwestern Graph Theory (MIGHTY) LIII Conference, Iowa State University, Ames, IA, September 21-22, 2012.
- Professional service** Co-organizer, One-Minute Teaching Innovations Webinar, hosted online by MAA Project NExT, March 17, 2021.
- Writer/Judge, 4 College Math Contest (for Denison University, Kenyon College, Ohio Wesleyan University and Wittenberg University), February 8, 2020.

Professional service continued

Judge, MAA Undergraduate Student Poster Session, AMS/MAA Joint Mathematics Meetings, 2017, 2018, 2019, 2020, and 2021.

Faculty mentor, Sonia Kovalevsky Mathematics Day, Iowa State University, Ames, IA, March 30, 2019.

Panelist, 7th Annual Sonia Kovalevsky Day, University of Wisconsin Eau Claire, Eau Claire, WI, March 9, 2019.

Co-Organizer, 14th Annual Pikes Peak Regional Undergraduate Mathematics Conference, Colorado College, Colorado Springs, CO, February 25, 2017.

Participant, MAA Instructional Practices Guide focus group, AMS/MAA Joint Mathematics Meetings, Atlanta, GA, January 5, 2017.

Proctor, Great Plains Math League, hosted by Iowa State University, 2012-2014.

Contributor to AMS MathSciNet Mathematical Reviews, 2018-2020.

Referee for academic journal articles:

- European Journal of Combinatorics: 2020, 2022
- Order: 2021
- Electronic Journal of Combinatorics: 2018
- Electronic Journal of Linear Algebra: 2017
- Linear Algebra and its Applications: 2016

Departmental and institutional service

Member, Committee on Educational Policies and Planning (CEPP), Skidmore College, 2021-2022.

Member, Long-Range Planning Committee, Department of Mathematics and Statistics, Skidmore College, 2021.

Organizer, Mathematics and Statistics Departmental Seminar, Skidmore College, 2020-present.

Organizer, Colorado College Rawles Prize Competition, 2018, 2019 and 2020.

Faculty mentor, Colorado College AWM Student Section, 2019-2020.

Member, New Calculus Textbook Selection Committee, Department of Mathematics and Computer Science, Colorado College, 2018-2019.

Lead Teaching Assistant, Department of Mathematics, Iowa State University, 2014-2015.

Liaison, MyLabsPlus and Assessment and Learning in Knowledge Spaces placement exam, Iowa State University Department of Mathematics, 2013.

Graduate student peer mentor, Iowa State University Department of Mathematics, 2011, 2012, and 2015.

Memberships

Pi Mu Epsilon: New York Alpha Theta Chapter, 2021-present.
Society for Industrial and Applied Mathematics, 2013-2016.
Iowa State University EDGE mentoring cluster, 2013-2016.
American Mathematical Society, 2011-present.
Association for Women in Mathematics, 2011-2016, 2021-present.
Phi Beta Kappa: Alpha Chapter of North Dakota, 2010-present.
National Alliance for Doctoral Studies in Mathematics, 2009-present.
International Linear Algebra Society (ILAS), 2009-present.

References

Dr. Ryan R. Martin, Ph.D. Advisor rymartin@iastate.edu
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