

Nicholas A. Scoville

Curriculum Vitae

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Ursinus College
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POSITIONS HELD

Ursinus College

Associate Professor 2016-present
Assistant Professor 2010-2016

Faulkner University

Adjunct Professor 2015-present

EDUCATION

Dartmouth College

Ph.D., Mathematics June 2010
Masters of Arts, Mathematics June 2007

Western Michigan University

Masters of Science, Mathematics June 2005
Bachelors of Science, Mathematics August 2003

Grand Rapids Community College

Associates, Architectural Drafting May 2001

TEACHING EXPERIENCE

Ursinus College,

Math 491: Algebraic Topology
Math 451: Discrete Morse Theory
Math 361: Graph Theory
CIE 100: Common Intellectual Experience
Math 421: Topology
Math 235: Linear Algebra
Math 10: Problem Solving
Math 322: Geometry
Math 341: Probability
Math 236W: Discrete Mathematics
Math 241Q: Statistics I
Math 112: Calculus II

Adjunct Professor , Faulkner University <i>Math 1312: Mathematics</i>	Spring 2015
Teaching Assistant , Dartmouth College	Summer 2009
Instructor , Dartmouth College	2007-2009
Teaching Assistant , Dartmouth College	2005-2007
Instructor , Western Michigan University	2003-2005
Undergraduate Teaching Assistant , Western Michigan University	2002-2003

INDEPENDENT STUDIES

Assistant Professor , Ursinus College	
Homotopy theory, Karthik Yegnesh	Fall 2016
Random discrete Morse theory, , Nikolai Peralta, Chase Babrich	Fall 2016
Algebraic topology, Matan Peleg	Fall 2016
Category theory, Michael Vennettilli	Spring 2015
Multiplication in discrete Morse theory, Rose Blanchard	Spring 2015
Number theoretic notions in discrete Morse theory, Ian Rand	Spring 2015
Discrete Morse theory, Tyler Helms	Fall 2014
Estimating the discrete LS category, Brian Green	Fall 2013
Homology and Cohomology, Seth Aaronson, Brian Green, Michelle Tanco	Spring 2013
Discrete LS category, Seth Aaronson	Spring 2013
Counting discrete Morse functions, Seth Aaronson	Spring 2012
Lie Groups, Brian Green	Spring 2012
Discrete Morse Theory, Mike Agiorgousis	Spring 2012
Markov Chains, Jayant Velagala	Spring 2012
Probability, Jayant Velagala	Fall 2011
Knot Theory, Will Molden	Fall 2011
Discrete Morse Theory, Seth Aaronson	Spring 2011

STUDENT POSTERS

Karthik Yegnesh <i>Families of Objects in Categories and Elementary Topoi</i> , AMS/MAA Joint Math Meetings, Atlanta, Georgia	January 2017
Karthik Yegnesh <i>Cosheaf theoretical constructions in networks and persistent homology</i> , 68 th annual Delaware Valley Science Fair, Oaks, Pennsylvania (won “first place” in Mathematics)	March 2016

- Karthik Yegnesh *Cosheaf theoretical constructions in networks and persistent homology*,
59th annual Montgomery County Science Research Competition, Collegeville, Pennsylvania
(won “first place” in math category) March 2016
- Matt Belle *Arboricity*,
AMS/MAA Joint Math Meetings, Baltimore, Maryland January 2014
- Brian Green *Estimating the discrete Lusternik–Schnirelmann category*,
AMS/MAA Joint Math Meetings, Baltimore, Maryland January 2014
- Seth Aaronson *Lusternik–Schnirelmann category for cell complexes*,
AMS/MAA Joint Math Meetings, San Diego, California January 2013
- Mike Agiorgousis, Brian Green, and Alex Onderdonk *Discrete Morse Functions and Homology*,
AMS/MAA Joint Math Meetings, San Diego, California (won “Outstanding Presentation” award) January 2013
- Mike Agiorgousis, Brian Green, and Alex Onderdonk *Discrete Morse Functions and Homology*,
Undergraduate Science Research Symposium, Haverford College September 2012
- Mike Agiorgousis, Brian Green, Alex Onderdonk, and Kim Rich *Discrete Morse Functions and Homology*,
Disappearing Boundaries Summer Research Meeting, Lebanon Valley College July 2012
- Seth Aaronson and Marie Meyer, “*Graph Isomorphisms in Discrete Morse Theory*”, *AMS/MAA Joint Meetings*,
Boston, MA January 2012

PUBLICATIONS

- D. Fernandez-Tertero, E. Macias-Virgos, N. A. Scoville, and J. A. Vilches, “Strong discrete Morse theory and simplicial LusternikSchnirelmann category: A discrete version of the Lusternik-Schnirelmann Theorem,” *submitted*
- Nicholas A. Scoville and Karthik Yegnesh “Cosheaf Theoretical Constructions in Networks and Persistent Homology,” *submitted*
- Erick Chastain and Nicholas A. Scoville, “Homology of Boolean functions and the complexity of simplicial homology,” *submitted*
- Mike Agiorgousis, Brian Green, Alex Onderdonk, Nicholas A. Scoville, and Kim Rich, “Homological sequences in discrete Morse theory,” *submitted*
- Nicholas A. Scoville and Willie Swei “On the Lusternik–Schnirelmann category of a simplicial map,” *Topology and its applications* 216 (2017), 116-128
- Brian Green, Nicholas A. Scoville, and Mimi Tsuruga, “Estimating the discrete Lusternik–Schnirelmann category,” *Topological Methods in Nonlinear Analysis*, 45, No. 1 (2015), 103–116
- Akshaye Dhawan, Michelle Tanco, and Nicholas A. Scoville, “A Distributed Greedy Algorithm for Constructing Connected Dominating Sets in Wireless Sensor Networks,” *SENSORNETS*, Lisbon, Portugal January 2014

Nicholas A. Scoville, “Metric Structures for CW Complexes,” *Topology Proceedings*, 44 (2014) 117–131

Seth Aaronson, Marie Meyer, Nicholas A. Scoville, Mitchell T. Smith, and Laura Stibich, “Graph Isomorphisms in discrete Morse theory,” *AKCE Int. J. Graphs Comb.*, 11, No. 2 (2014), 163–176

Seth Aaronson and Nicholas A. Scoville, “Lusternik–Schnirelmann category for cell complexes,” *Illinois J. of Mathematics*, 57, No. 3 (2013), 743–753

Nicholas A. Scoville, “Georg Cantor at the Dawn of Point-Set Topology,” *Loci*, (March 2012), DOI: 10.4169/loci003861

Nicholas A. Scoville, “Lusternik–Schnirelmann Category and the Connectivity of X ,” *Algebraic & Geometric Topology*, 12 (2012) 435–448

Nicholas A. Scoville, “Mapping Cone Sequences and a Generalized Notion of Cone Length,” *JP Journal of Geo. and Top.*, 11(2011), Issue 3, 209–233

Nicholas A. Scoville, “A Metric for Homotopy Types,” Ph.D. Thesis, Dartmouth College, Spring 2010

Rob Nendorf, Nicholas A. Scoville, Jeff Strom, “Categorical Sequences,” *Algebraic & Geometric Topology*, 6 (2006) 809–838

SELECTED PRESENTATIONS

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| <i>Collaborative Research: Transforming Instruction in Undergraduate Mathematics via Primary Historical (TRIUMPHS)</i> | January, 2017 |
| MAA Invited Paper Session on Research in Improving Undergraduate Mathematical Sciences Education: Examples Supported by the National Science Foundation’s IUSE: EHR Program, AMS/MAA Joint Meetings, Atlanta (invited talk) | |
| <i>(Strong) discrete Morse theory as an introduction to topology</i> | September, 2016 |
| Colloquium, Butler University, (invited talk) | |
| <i>Georg Cantor at the dawn of point-set topology</i> | September, 2016 |
| Butler University, (invited talk) | |
| <i>A Simplicial Lusternik–Schnirelmann Theorem (poster)</i> | July, 2016 |
| ATMCS 7, Torino Italy | |
| <i>Connecting Past to Present: An approach to teaching topology via original resources</i> | July, 2016 |
| HPM 2016, Montpellier France | |
| <i>The Cantor Set before Cantor</i> | January, 2016 |
| AMS/MAA Joint Meetings, Seattle Washington | |
| <i>Discrete Morse theory as an introduction to Topology</i> | December 2015 |
| University of Sevilla (invited talk) | |

- Graph isomorphisms in discrete Morse theory* October, 2015
Colloquium, Lehigh University (invited talk)
- Estimating the discrete Lusternik–Schnirelmann category* February, 2015
Homology: Theoretical and Computational Aspects, Genoa, Italy
- Discrete Morse theory at the service of Number Theory* January, 2015
MAA General Contributed Paper Session on Research in Topology, AMS/MAA Joint Meetings, San Antonio
- Graph isomorphisms in discrete Morse theory* October, 2014
Colloquium, Seattle University (invited talk)
- Lusternik–Schnirelmann category, categorical sequences, and rational numbers* September, 2014
Topology seminar, University of Michigan (invited talk)
- Topology and its history- must there be a separation?* May, 2014
Pohle Colloquium, Adelphi University (Invited talk)
- Lusternik–Schnirelmann category, categorical sequences, and rational numbers* February, 2014
Geometry/Topology seminar, University of Pennsylvania (Invited talk)
- Topology and its history- must there be a separation?* January, 2014
PASHoM Seminar, Villanova University (Invited talk)
- Graph isomorphisms via discrete Morse theory* January, 2014
AMS Special Session on Trends in Graph Theory, AMS/MAA Joint Meetings, Baltimore
- Topology and its history are connected under the classroom topology* October, 2013
Special Session on History of Mathematics and Its Use in Teaching,
AMS Southeastern Sectional meeting, University of Louisville (Invited talk)
- Computing the Discrete Lusternik–Schnirelmann category of a simplicial complex* July, 2013
Applied Topology in Bedlewo, Bedlewo, Poland
- Discrete Lusternik–Schnirelmann category* October, 2012
General Contributed Paper Session, AMS Southeastern Sectional Meeting, Tulane University
- Discrete Morse theory and the homology of simplicial complexes* August, 2012
General Contributed Paper Session, Mathfest, Madison
- Fun with Pi* March, 2012
Pi Day Celebration, Ursinus College
- Lusternik–Schnirelmann Category and the Connectivity of X* January, 2012
Research in Algebra and Topology, AMS/MAA Joint Meetings, Boston
- Graph Isomorphisms in Discrete Morse Theory* November, 2011
Saint Joseph’s University Colloquia, Philadelphia PA (Invited talk)
- Graph Isomorphisms in Discrete Morse Theory* October, 2011
Swarthmore College Colloquia, Swarthmore PA (Invited talk)
- Graph Isomorphisms in Discrete Morse Theory* September, 2011
Gettysburg College Colloquia, Gettysburg PA (Invited talk)
- Discrete Morse Functions on Graphs* August, 2011
Pure Mathematics Session, Mathfest, Lexington

<i>The Advent of Point-Set Topology</i> General Topology Session, AMS/MAA Joint Meetings, New Orleans	January, 2011
<i>Pick's Theorem: How to compute the area of a polygon</i> ϵ -talk Seminar, Ursinus College	October, 2010
<i>Rethinking the way we teach Point-Set Topology</i> The History of Mathematics and Its Uses in the Classroom, Mathfest, Pittsburgh	August 2010
<i>Irrational Numbers</i> St. Mary's University, San Antonio, TX (Invited Talk)	February 2010
<i>2 Equations Attributed to Euler</i> Mount Saint Mary's College, Newburgh, NY (Invited Talk)	February 2010
<i>What makes Topological Spaces different?</i> Ursinus College, Collegeville, PA (Invited Talk)	January 2010
<i>A Metric for Homotopy Types</i> Geometry/Topology Session III, AMS/MAA Joint Meetings, San Francisco	January 2010
<i>Generalized Cone and Killing Lengths</i> Graduate Student Seminar, Dartmouth College	November 2008
<i>Hopf Invariants and the Reduced Diagonal</i> Topology Seminar, Western Michigan University	April 2004
<i>Something About the Quartic</i> History of Math Seminar, Western Michigan University	February 2004
<i>Diophantine Equations</i> Student Seminar, Western Michigan University	February 2004
<i>Beginning Invariant Theory and the Fundamental Theorem of Symmetric Polynomials</i> Algebra Seminar, Western Michigan University	January 2004
<i>Two Special Cases of Ganea's Conjecture</i> Topology Seminar, Western Michigan University	December 2003

WORKSHOPS RUN

<i>TRIUMPHS Training Workshop</i> University of Colorado Denver	September, 2016
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PROFESSIONAL AFFILIATIONS

<i>Council on Undergraduate Research</i>	2013-Present
<i>History of Mathematics Special Interest Group of the Mathematical Association of America (HOMSIGMAA)</i>	2012-Present

<i>Association of Christians in the Mathematical Sciences</i>	2011-Present
<i>Mathematical Association of America</i>	2009-Present
<i>American Mathematical Society</i>	2005-Present
<i>Pi Mu Epsilon Mathematics Honors Society</i>	Fall 2002-Spring 2005

HONORS AND AWARDS

Ursinus College

Collaborative Research: RUI: Transforming Instruction in Undergraduate Mathematics via Primary History Sources NSF IUSE (Aug. 2015- Sept. 2020) PIs at Colorado State, Central Washington, NMSU, Xavier, U Colorado, Denver, U Florida	\$71,002
Best oral presentation at HTCA conference in Genoa, Italy sponsored by Gruppo Italiano Ricercatori in Pattern Recognition.	February 2015
Mellon travel grant	July 2013
Mellon travel grant	May 2012
Project NExT Fellow	Aug. 2010 – Aug. 2011

Dartmouth College

GAANN Fellowship	Sept. 2009 – Sept. 2010
Dartmouth College Graduate Fellowship	2005– 2010

ADDITIONAL SKILLS

Mathematical Software: LATEX, MATLAB, Maple, BlackBoard, WeBWork, HTML, Minitab, Derive, Java.

MATHEMATICAL ACTIVITIES

Served on panel “The Research and Teaching Pendulum: January 2017 Finding a Stable Equilibrium” at AMS/MAA Joint Math Meetings	January 2017
Organized Special Session “Applied and Computational Topology, ” with Matthew Wright and Paweł Dłotko at AMS/MAA Joint Math Meetings	January 2016
Organized panel “Finding a thesis topic and advisor, ” at AMS/MAA Joint Math Meetings	January 2016

Reviewed applications for Posters on the Hill	Fall 2015
Reviewer for MathSciNet Mathematical Reviews	February 2015-present
Organized panel “Graduate school: Choosing one, getting in, staying in, ” at AMS/MAA Joint Math Meetings	January 2015
Reviewed applications for Posters on the Hill	Fall 2014
Book reviewer for online MAA book reviews	2014-Present
Faculty representative for Ursinus MAA student chapter	2014-Present
CUR Councilor in the Mathematics and Computer Sciences Division	2014-Present
Served on panel “You published your dissertation: now what?” at AMS/MAA Joint Math Meetings	January 2013
Organized panel “The on-campus interview survival guide” at AMS/MAA Joint Math Meetings	January 2013
Reviewer for mathematical publication database Zentralblatt	August 2012-present
Senior Personal, Ursinus College REU (NSF Grant No. DMS-1003972)	June 2012-August 2012
Organized Panel “Hit the Ground Running! Interview like a Pro and land the job” at AMS/MAA Joint Math Meetings	January 2012
Senior Personal, Ursinus College REU (NSF Grant No. DMS-1003972)	June 2011-August 2011
Judge for MAA Student Paper Session 3, MathFest	August 2011
Judge of research abstracts for Young Mathematicians Network Conference applicants	July 2011
Judge for MAA Student Poster Session, Joint Mathematics Meetings	January 2011
Calculus Committee, Ursinus College; Member	August 2010-present
Statistics Committee, Ursinus College; Member	August 2010-present

Organizer for Ursinus College ϵ-talks	Fall 2010-present
Treasurer for YMN (Young Mathematicians Network)	2010-present
Judge for MAA Student Paper Session 11, MathFest	August 2010
Reader/Reviwer for “Introduction to Homotopy Theory” by Martin Arkowitz	2007-2008
Student Seminar Organizer	2004-2005
WMU Pi Mu Epsilon Graduate Representative	2003-2005
Grader	Summer 2004, Summer 2003

ADDITIONAL ACTIVITIES

First Grade PREP Teacher	Fall 2015-present
Taught hour-long once weekly religious formation/catechism class to first grade students at Sacred Heart Parish, Royersford PA.	
Fourth Grade PREP Teacher	Fall 2014-Spring 2015
Taught hour-long once weekly religious formation/catechism class to fourth grade students at Sacred Heart Parish, Royersford PA.	
Ursinus College Newman Society Faculty Advisor	Fall 2011-present
Sixth Grade PREP Teacher	Fall 2011-Spring 2014
Taught hour-long once weekly religious formation/catechism class to sixth grade students at Sacred Heart Parish, Royersford PA.	
Beat <i>Silver Surfer</i>	September 2011
Finished NES game <i>Silver Surfer</i> (Arcadia Systems, 1990), considered by many to be the most difficult game in NES history.	
Sixth Grade Religious Education Teacher	Fall 2010-Spring 2011
Taught hour-long once weekly religious formation/catechism class to sixth grade students at St. Norbert Parish, Paoli PA.	
Seventh Grade Religious Education Teacher	Fall 2009-Spring 2010
Taught hour-long once weekly religious formation/catechism class to seventh grade students at St. Denis Parish, Hanover NH.	
Contra Speedrun	Fall 2008
Defeated NES video game Contra in 11 minutes and 4 seconds without cheats or turbos, Hanover NH	
Youth Group Leader at St. Denis Parish	Fall 2008-Spring 2009
Gave lectures, organized activities, participated in service projects	

REFERENCES

Martin Arkowitz (advisor)
6188 Kemeny Hall
Dartmouth College Mathematics Dept.
Hanover, NH 03755
Martin.A.Arkowitz@dartmouth.edu

Mohammed Yahdi
Departement of Math and CS
610 E. Main Street
Collegeville, PA 19426
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Jeff Strom
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Western Michigan University
Kalamazoo MI 49008-5248
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Dorothy I. Wallace (teaching letter)
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Hanover, NH 03755
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Vladimir Chernov
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