CURRICULUM VITAE (2024)

Brian Heinold
Associate Professor
Department of Mathematics and Computer Science
Mount St. Mary's University
Emmitsburg, MD 21727
(301)-447-6823
heinold@msmary.edu
https://brianheinold.net

EDUCATION

- PhD, Mathematics. Lehigh University, May 2006. Thesis topic: Sum list coloring and choosability. Advisor: Garth Isaak.

- MS, Mathematics. Lehigh University, May 2003.

- BS, Physics. Montclair State University, May 2001, *magna cum laude*. Additional majors in mathematics and classics.

TEACHING EXPERIENCE

- **Positions held**

  - Associate Professor, Department of Mathematics and Computer Science, Mount St. Mary's University, 2012–present.
  - Assistant Professor, Department of Mathematics and Computer Science, Mount St. Mary's University, 2006–2012.
  - Teaching Assistant, Department of Mathematics, Lehigh University, 2001–2006.
  - Adjunct Professor, Department of Mathematical Sciences, Montclair State University. Lab assistant for College Physics, Summer 2001.

- **Courses Taught**

  - Mount St. Mary's University
    * *Math:* Elementary Statistics; Concepts of Mathematics for Teachers II; Mathematical Thinking; Precalculus; Calculus I, II, III; Discrete Mathematics; Linear Algebra; Graph Theory; Real Analysis; Numerical Methods; Number Theory; Topology; Probability; Geometry; Algebraic Structures; Math Seminar.
    * *Computer Science:* Introduction to Computer Science I, II; Data Structures and Algorithms; Software Development; Principles of Programming Languages; Artificial Intelligence; Algorithms; Network Systems & Design; Computer Security I, II; Operating Systems; Theory of Computation; Database Management Systems; Senior Project.
    * *Others:* Freshman Seminar; Veritas Symposium.
  - Lehigh University — Basic Statistics, Survey of Linear Algebra, Survey of Calculus II, Calculus I Part B.

RESEARCH EXPERIENCE

- **Publications**

  - B. Heinold, F. Portier, and S. Weiss, A Small Paper on Smalltalks: Experiences in Running a Student-Faculty Colloquium Series. *The Journal of Computing Sciences in Colleges*, 31 (4), 86-92, 2016.

- B. Heinold, The sum choice number of $P_3 \square P_n$, *Discrete Applied Mathematics*, **160** (2012), 1126-1136.
- B. Heinold, Sum choice numbers of some graphs, *Discrete Mathematics*, **309** (2009), 2166-2173.
- B. Heinold, A survey of sum list coloring, *Graph Theory Notes of New York*, **LII** (2007), 38-44.

- **Textbooks**

  - *APEX Calculus*, Contributing author. Used in around 30 schools.
  - *A Practical Introduction to Python Programming*, used in courses at Mount St. Mary's University and elsewhere.
  - *A Quick Intro to Java*, used in courses at Mount St. Mary's University.
  - *An Intuitive Introduction to Data Structures*, used in courses at Mount St. Mary's University.
  - *An Informal Introduction to Formal Languages*, used in my own courses.
  - *An Intuitive Guide to Numerical Methods*, used in courses at Mount St. Mary's University and elsewhere.
  - *A Simple Introduction to Graph Theory*, used in courses at Mount St. Mary's University and elsewhere.
  - *Number Theory Notes*, used in my own courses.
  - *Notes for Discrete Mathematics*, used in my own courses.

- **Presentations**

  - *Using standards-based grading in all classes* MAA MD-DC-VA Section Meeting, Virginia State University, Fall 2024.
  - *Standards-based grading in a wide variety of courses* CCSC-E Meeting, Mount St. Mary's University, Fall 2024.
  - *Beautiful images from some simple formulas.* Hood College, Spring 2024.
  - *Fun with L(2,1)-labeling* MAA MD-DC-VA Section Meeting, Virginia State University, Spring 2023.
  - *Some unusual mathematical images and the math behind them.* Invited address at MAA MD-DC-VA Section Meeting, Shenandoah University, Fall 2022.
  - *Some Original Estimation/Fermi Problems.* MAA MD-DC-VA Section Meeting, Montgomery College, Spring 2022.
  - *Exercises for a Numerical Methods Course.* MAA MD-DC-VA Section Meeting, Christopher Newport University, Fall 2017.
  - *Probability Questions from the Game Pickomino.* MathFest 2017, Chicago, IL.
  - *Beautiful images from some simple formulas.* Salisbury University, Spring 2017.
  - *Probability Questions from the Game Pickomino.* MAA MD-DC-VA Section Meeting, Johns Hopkins University, Fall 2016.
  - Panelist, *Ethics and Research in Cybersecurity* at Mount St. Mary's University, Fall 2016.
  - *Beautiful images from some simple formulas.* Millersville University and Franklin & Marshall College Joint Mathematics Colloquium, Fall 2016.
  - *Using Python in a Numerical Methods Course.* MathFest 2016. Columbus, OH.
  - *Smalltalk – A Student-Faculty Colloquium.* MAA MD-DC-VA Section Meeting, St. Mary's University of Maryland, Fall 2015.
  - *A Small Talk on Smalltalks: Experiences in Running a Student-Faculty Colloquium Series.* CCSC Eastern Conference, Fall 2015, Stockton University. (With Scott Weiss).
  - *Surprises from iterating discontinuous functions.* MathFest 2015. Washington, DC.

- *e.* Longwood University Mathematics Colloquium, Fall 2014.
- *Automatic Differentiation.* MAA MD-DC-VA Section Meeting, James Madison University, Spring 2014.
- *Creative Approaches to Discrete Mathematics.* MAA MD-DC-VA Section Meeting, Hampden-Sydney College & Longwood University, Fall 2013.
- *Some different applications of logarithms.* MathFest 2013, Hartford, CT.
- *Some different applications of logarithms.* MAA MD-DC-VA Section Meeting, Salisbury University, Spring 2013.
- *Beautiful images from some simple formulas.* McDaniel College Mathematics Colloquium, Fall 2012.
- *Divisibility plots.* MathFest 2012. Madison, WI.
- *Some bizarre mathematical images.* MAA MD-DC-VA Section Meeting, Stevenson University, Fall 2011.
- *Iterating the complex logarithm.* MAA MD-DC-VA Section Meeting, Christopher Newport University, Fall 2011.
- *Beautiful images from some simple formulas.* Seton Hall University Mathematics Colloquium, Fall 2011.
- *A 200-Question, Campus-Wide Math Contest.* MathFest 2011. Lexington, Kentucky.
- *Iterating a discontinuous function* MAA MD-DC-VA Section Meeting, Randolph Macon College, Spring 2011.
- *Patterns and Number Theory* MAA MD-DC-VA Section Meeting, George Mason University, Fall 2010.
- *Hidden Patterns in Functions* MAA MD-DC-VA Section Meeting, Virginia State University, Spring 2010.
- *Patterns and Fractals from a Generalized Bitwise AND* MAA MD-DC-VA Section Meeting, Goucher College, Fall 2009.
- *A 200-Question, Campus-Wide Math Contest.* MAA MD-DC-VA Section Meeting, University of Mary Washington, Spring 2009.
- *Sum list coloring.* 46th Midwest Graph Theory Conference, West Virginia University, 2008.
- *Beautiful images from some simple formulas.* Longwood University Mathematics Colloquium, 2008.
- *Sum list coloring.* Invited presentation at AMS Special Session on Graph Theory and Combinatorics, Hoboken, NJ, 2007.
- *Sum list coloring.* Graph Theory Day 51, Montclair State University, 2006.
- *Choosability of complete bipartite and related graphs.* Lehigh Graph Theory and Combinatorics Seminar, 2005.

Professional Activities

- Webmaster for MAA MD-DC-VA section, 2013–present
- Peer Reviewer for *Journal of Graph Theory*, *Discrete Mathematics*, *Discrete Applied Mathematics*, *Applied Mathematics Letters*, *Graphs and Combinatorics*, *Electronic Journal of Combinatorics*, *Discussiones Mathematicae Graph Theory*.
- Member of AMS, MAA since 2006.

University Activities

- Faculty Secretary, Mount St. Mary's University, 2017–present.
- SPARC Planning Committee, Mount St. Mary's University, 2012–present.
- Enrollment Management Committee, Mount St. Mary's University, 2016–2019.
- Writer/grader for Founders Exam 2013–2019.
- Goldwater Scholarship Campus Representative, 2011–2017, member of Goldwater Committee 2018–present.
- Faculty Governance Committee, Mount St. Mary's University, 2012–2015.
- *Veritas* Committee, Spring 2014.
- Assessment Committee, Mount St. Mary's University, 2009–2011.
- Technology Advisory Committee, Mount St. Mary's University, 2008–2010, Fall 2011.
- Library Committee, Mount St. Mary's University, 2006–2010.
- Search committee member for open positions in Math & CS (2010, 2013, 2014, 2015, 2016, 2020, 2023, 2024), Business Management (2017), Dean of the School of Natural Science and Mathematics (2017).
- Advisor for the following honors projects:

    - *Effective Security and Risk Mitigation for Enterprise POS Systems*, Jarrod Stebick, 2023.
    - *The Meaning of Words: How Therapy-Speak Influences Language*, Collins Nji, 2022.
    - *Candlestick Analysis*, Andrew Ku, 2022.
    - *Using Honeypots to Study Network Attacks*, Ryen Kump, 2022.
    - *Living in the Void: The Future of Space Colonization*, Laurence Canete, 2021.
    - *Yelling Fire in a Movie Theater: Creating a Crowd Panic Simulation Program*, Matthew McDonald, 2021.
    - *Charitable Efficiency: Optimizing and Donating Used Computers*, Danielle Beauchamp, 2018.
    - *Characteristics of the Menger Sponge Applied to 3D Printed Geometric Shapes*, Rachel Meyerhofer, 2018.
    - *Get on the Beach: Programming Motor Controllers for Beach Mobility Chairs*, Molly Ousborne, 2018.
    - *Elliptic Curve Cryptography and the Use of Abelian Groups in Modern Cryptography*, Isaac Zappe, 2016.
    - *Cheating at Cards: Using the Mathematics of Game Theory to Master the Card Game 31*, Michelle Rose, 2015.
    - *The Firefighter Problem*, Amy Strosser, 2014.
    - *The Soccer Strategy Simulator*, Eric Detzel, 2011.
    - *Analyzing the Behaviors of Mathematical Functions Through the Use of Contour Maps*, Jackie Kearney, 2010.
    - *Fun with Graph Labeling: How Low Can You Go?* Chris Lewis, 2010.

- Advisor for many student research projects presented at the SPARC festival.
- Led honors discussion in Fall 2010 entitled *What is Mathematics Really About, and How Does This Affect the Math We Learn in School?*

Departmental Activities

- Smalltalk coordinator (weekly department colloquium), 2009–present.
- COMAP team advisor, 2009–present.
- Editor of department's alumni newsletter, 2011–present.
- 200 Years/200 Questions contest organizer, 2008–2009.