Steven Berger

Ph.D. Candidate in Mathematics

Lehigh University

Bethlehem, PA 18015

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Website

Education

- **Lehigh University** Bethlehem, PA
  Ph.D. in Applied Mathematics **Expected August 2026**
  - Dissertation: *Analysis and Creation of Chord Progressions in Baroque Music*
  - Status: Candidate (All coursework completed; defending Summer 2026)

- **Lehigh University** Bethlehem, PA
  M.S. in Applied Mathematics *2023*

- **Moravian University** Bethlehem, PA
  B.S. in Mathematics / B.A. in Music *2020*
  - Honors Thesis: *Similarity Analysis of Hymns Using Polynomial Regressions*

Submitted Manuscripts

- **Berger, S.** and Conus, D. "The Optimal Strategy for Playing Lucky 13." **Available on arXiv.**

- **Berger, S.** "Generation of Chord Progressions Using Guided Markov Chains." **Submitted to *MusMat: Brazilian Journal of Music and Mathematics*, 2026.** (Manuscript available upon request).

Teaching Experience

- **Basic Statistics** *Lehigh University* *Spring '26*

  - Currently serving as Primary Instructor and Course Coordinator.
  - Designed data analysis labs using Quarto.

- **Calculus with Business Applications 1** *Lehigh University* *Fall '24 – Spring '25*

  - Instructor of Record for multiple sections.
  - Redesigned the course to focus on economic applications of calculus.

- **Elementary Statistics** *Moravian University* *Summer '25*

  - Ran weekly online synchronous lectures and engaged students through class polls.
  - Designed data analysis projects for students using RStudio software.

- **Basic Statistics** *Lehigh University* *Spring '24*

  - Served as Primary Instructor and Course Coordinator.

– Designed data analysis projects for students using Minitab software.

- **Survey of Calculus 1** *Lehigh University* *Fall '23*

    – Led weekly recitation sections and designed recitation quizzes.

- **Introduction to Statistical Reasoning** *Lehigh University* *Spring '23*

    – Taught students statistical computer programming using RStudio.

- **Teaching Assistant** *Lehigh University* *Fall '20 – Fall '22*

    – Served as TA/Grader for Calculus I-III, Statistical Machine Learning, and Real Analysis.

Mentoring & Leadership

- **Graduate Student Mentor (2024 – Present):** Served as primary mentor for first-year Ph.D. students. Led weekly review sessions for comprehensive exams; **100% of mentored students passed their exams.**

- **Graduate Student Ambassador,** Lehigh College of Arts and Sciences (2025 – Present)

- **President,** Lehigh University Graduate Student Intercollegiate Mathematics Seminar (2022 – 2025)

Selected Presentations

- *Are You Feeling Lucky? Probability in a Trivia Game* - Lehigh Probability Seminar, 2025

- *Musically Important Information* - Lehigh Graduate Student Seminar, 2024

- *Markov Chains and Musical Key Signature Analysis* - Lehigh Graduate Student Seminar, 2023

- *The Mathematics of 20th Century Music* - Moravian Undergraduate Math Conference, 2019

Skills

- **Computation:** RStudio, Python, Minitab, LaTeX, Excel, SQL.

- **Pedagogy:** Active Learning, Gradescope, Canvas LMS.