

Steven Berger

Teaching Assistant/PhD Candidate at Lehigh University
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November 24, 2025

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Website

Education

Lehigh University

PhD in Applied Mathematics

- Areas of Interest: Statistics, Machine Learning, and Music Theory
- Thesis Title: *Analysis and Creation of Chord Progressions in Baroque Music*

Bethlehem, PA

2023 - ongoing

Lehigh University

M.S. in Applied Mathematics

Bethlehem, PA

2020 - 2023

Moravian College (now Moravian University)

B.S. in Mathematics

Bethlehem, PA

2016 - 2020

- Honors Thesis: *Similarity Analysis of Hymns Using Polynomial Regressions*

Moravian College (now Moravian University)

B.A. in Music

Bethlehem, PA

2016 - 2020

Teaching Experience

Calculus with Business Applications 1 Lehigh University Fall '24, Spring '25, and Fall '25

- Current teaching assignment

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 '24

- Served as TA
- Led weekly recitation sections and designed recitation quizzes

Introduction to Statistical Reasoning and Methods Lehigh University Spring '23

- Served as course TA and ran weekly computing sessions
- Taught students statistical computer programming using RStudio

Teaching Assistant Lehigh University Fall '20-Fall '22

- Served as TA or grader for Basic Statistics, Calculus I, Calculus II, Calculus III, Probability/Statistics, Statistical Machine Learning, and Real Analysis
- Designed weekly recitation quizzes and graded HW/Exams
- **Instructor** *Summerbridge at Moravian Academy Summer '18 & Summer '19*
 - Served as math and music teacher for a middle school summer enrichment program
 - Taught project-based math lessons and took students on tours of local colleges

Preprints

- Berger, S. and Conus, D. *The Optimal Strategy for Playing Lucky 13* - **Available on arXiv.org**
- Berger, S. *Generation of Chord Progressions Using Guided Markov Chains* - **In preparation**

Mentoring

- **Lehigh University Graduate Students Fall 2024 and Fall 2025** - I served as a mentor for all new M.S/PhD students in the mathematics department. I was on the Q&A panel for graduate student life at the start of semester orientation and led weekly problem sessions to prepare students to take the department's comprehensive exams in mathematics or statistics.

Skills

- **Computer Technology:** MS Office, RStudio, Python, LaTex, Java, Jython, Gradescope
- **Other:** Music Theory, Music Composition

Presentations

- *Are You Feeling Lucky? Probability in a Trivia Game* - Lehigh University Probability Seminar 2025
- *Musically Important Information* - Lehigh University Graduate Student Mathematics Seminar 2024
- *Markov Chains and Musical Key Signature Analysis*- Lehigh University Graduate Student Mathematics Seminar 2023
- *Markov Chain Music* - Lehigh University Graduate Student Mathematics Seminar 2022
- *Mathematical Music Theory* - Lehigh University Graduate Student Mathematics Seminar 2021
- *Similarity Analysis of Hymns Using Polynomial Regressions* - Moravian College Honors Conference 2019
- *The Mathematics of 20th Century Music*- Moravian College Undergraduate Mathematics Conference 2019

- *The Harmonious Sounds of Mathematics*- Moravian College Undergraduate Mathematics Conference 2017

Leadership

- **Graduate Student Ambassador** - Lehigh University College of Arts and Sciences (2025-Present)
- **President** - Lehigh University Graduate Student Intercollegiate Mathematics Seminar (2022 - 2025)
- **Vice President** - Moravian University Math Society (2019 - 2020)
- **President** - Moravian University Chapter of Pi Mu Epsilon (2019 - 2020)

References

Available Upon Request.