# JACOB ZOROMSKI

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## EDUCATION

**University of Notre Dame, Notre Dame, IN**                                **Aug 2019 – May 2025**
Ph.D. Mathematics earned May 2025

**University of Wisconsin-Madison, Madison, WI**                        **Sept. 2015 – May 2019**
B.A. in Mathematics earned May 2019

## DISSERTATION

"Multigraded and Symmetric Syzygies", May 2025.

## PUBLICATIONS

C. Crowley, J. Rodriguez, J. Weiker, J. Zoromski, "MultiRegeneration for Polynomial System Solving." *ACM Communications in Computer Algebra,* vol. 54, no. 2, Sept. 2020, pp. 39-43

## PREPRINTS

Jacob Zoromski, "Monomial Cycles in Koszul Homology."  Preprint. arXiv:2409.07583. 2024
Jacob Zoromski, "Equivariant Syzygies of 2 x 2 Permanents of 2 x n Matrices." Preprint. arXiv:2502.05358. 2025.

## TEACHING

Quantitative Methods I (College Algebra) – FA '25 – University of Scranton
Calculus II – FA '25 – University of Scranton
Discrete Mathematics – FA '24 – at Holy Cross College – Notre Dame
Elements of Calculus (Business Calculus) - SP '22, SU '22, FA '22 – at Notre Dame

## WORK EXPERIENCE

**University of Scranton**                                                              **Aug. 2025 – Present**
Visiting Assistant Professor
- Teaching calculus courses to engineering students and other STEM majors, as well as college algebra for non-STEM majors, where I help guide many students who have struggled with math in the past to get through the requirement and succeed in future courses.

**University of Notre Dame**                                                         **Aug. 2020 – May 2025**
Graduate Student Instructor
- Instructor for Elements of Calculus, a first-year calculus course for Business majors
- Lead tutorial sections for Honors Calculus, a proof-based course, giving lectures and grading quizzes

**Holy Cross College – Notre Dame**                                            **Aug. 2024 – Dec. 2024**
Adjunct Professor
- Taught Discrete Mathematics, teaching a mix of local and international liberal arts students mathematical reasoning skills, including sets and basic statistics.

RELATED EXPERIENCE

**Visiting Graduate Student Scholar**                                     **Jan. 2024 – May 2024**

Visiting graduate student at the University of California – Berkeley sponsored by David Eisenbud. Primarily participated in the SLMath Semester in Commutative Algebra, attending seminars and collaborative research sessions with many of the leading experts in the field.

**Notre Dame Teaching Center Involvement**                               **Summer 2022-Present**

Took a course on Inclusive Teaching Summer 2023, learning how to create a welcoming classroom environment, inclusive syllabi, and how to implement various inclusive teaching theories and strategies. Participated in two reading groups with other graduate student instructors and faculty, reading pedagogy books. Led one of these groups. Attended seminars in progress towards teaching certificate.

**History of Math Presentations**                                        **Jan. 2023, Nov. 2023**

Researched and presented lectures on the history of calculus at the Notre Dame Mathematics Graduate Student Seminar. Current ideas for future talks include ancient Greek mathematics, Pascal's concept of the infinite in math and theology, and the work of Galileo.

**Macaulay2 Workshops**                                                  **April 2018, June 2023**

Developed code for the computer algebra system Macaulay2. Projects included creating a program to aid in a mathematical biology graduate student's research project (2018) and working in a group led by David Eisenbud to study the structure of infinite resolutions, for which we developed packages (2023).

**Volunteer Tutor at DePaul Academy**                                    **Sept. 2019 – May 2023**

Tutored incarcerated students in math and other subjects. Served as a positive role model for young people that didn't have many. I did my best to fill in large educational gaps often stemming from years of family and academic and behavioral issues. My greatest accomplishments here include teaching times tables to an $8^{th}$ grader and seeing one of my students pass his GED exam.

**Notre Dame Center for Social Concerns Graduate Institute for Engaged Teaching and Research**                                                   **October 2022**

A weeklong institute promoting socially-engaged graduate student research and teaching. Met with community leaders and faculty from South Bend and Chicago to explore models of effective community-university partnerships. Learned about projects in a range of disciplines including the arts, chemistry, housing, sociology, and others, each grounded in efforts to advance justice.

**Summer Research Program**                                              **May 2019 – July 2019**

Researched computational methods for solving systems of polynomial equations, and applied problems, under the direction of Jose Rodriguez (UW-Madison). Helped write the paper "MultiRegeneration for Polynomial System Solving," published in Sept. 2020.

AWARDS

Kaneb Center for Teaching and Learning Outstanding Graduate Student Teaching Award, AY 2022-2023
ISAAC2020 Distinguished Software Presentation Award, 2020, for "MultiRegeneration for Polynomial System Solving."

SKILLS

Extensive coding experience in Macaulay2 (including developing packages).
Intermediate experience in Python. Basic experience in SAGE, MAGMA, and
Java.

FELLOWSHIPS, CONFERENCES & WORKSHOPS

Invited Speaker – AMS Spring Central Sectional Meeting Special Session on "Algebraic and Homological
Perspectives with a view towards Geometry" – Mar. 29, 2025
SLMath Semester in Commutative Algebra – Spring 2024
GAeL XXX, University of Warwick – July 2023 – Poster Presentation
de Nicola Center for Ethics and Culture Sorin Fellow, 2021 - 2025
International Thomas Merton Society Daggy Fellowship – June 2023 - 2024
Macaulay2 Workshop, University of Minnesota Twin Cities, June 2023
MSRI/SLMath Summer School on Commutative Algebra and its Interaction with Algebraic Geometry, University of
Notre Dame, May 2023
Notre Dame Center for Social Concerns Graduate Institute for Engaged Teaching and Research – October 2022

PRESENTATIONS

Invited Speaker – Texas A&M Geometry Seminar – April 2025
Invited Speaker – AMS Spring Central Sectional Meeting Special Session on "Algebraic and Homological
Perspectives with a view towards Geometry" – Mar. 29, 2025
ALGECOM Fall 2024, University of Michigan – Ann Arbor, Poster Presentation Nov. 2024

SERVICE

Directed Reading mentor for two undergraduate math majors, Spring 2024
Volunteer tutor at DePaul Academy, serving incarcerated youth, Sept. 2019 – May 2023
Volunteer math tutor at St. Thomas More Academy, Sept. – May 2023
Volunteer at St. Vincent de Paul Society of St. Joseph County, making deliveries for food pantry, June 2022 – Dec
2023