Date prepared: May 12, 2026

Brian Mulholland
Curriculum Vitae

Office: 132 Hayes-Healy
Mail: 255 Hurley Hall, Notre Dame, IN 46556
Phone: 574-634-1425
Email: bmulholland@nd.edu

Summary

As an Associate Teaching Professor at the University of Notre Dame, my work focuses on enhancing mathematical education through innovative teaching strategies and curriculum development. I have led initiatives to implement proficiency-based grading, integrate inquiry-based learning, and design courses that prepare students for complex mathematical concepts and their applications. My administrative contributions include coordinating our summer online courses, managing the Math Help Room, and directing the ASCEND program, which supports first-year students in their transition to university-level mathematics. Rooted in the mission of Notre Dame and the Holy Cross tradition, my efforts aim to create inclusive and engaging learning environments that promote student success, foster a deep understanding of mathematical principles, and encourage the holistic development of each student.

Education

Jan 2020 **Ph.D.**, *University of Notre Dame*, Notre Dame, IN
Mathematics
Dissertation: "Holomorphic Polar Coordinates and Segal–Bargmann Space"
Advisor: Brian Hall

May 2015 **M.S.**, *University of Notre Dame*, Notre Dame, IN
Mathematics

May 2013 **B.S.**, *West Chester University*, West Chester, PA
Mathematics, *summa cum laude*

Employment

July 2026 - Present **Associate Teaching Professor**, Department of Mathematics, University of Notre Dame

July 2025 - July 2026 **Assistant Teaching Professor**, Department of Mathematics, University of Notre Dame

July 2020 - July 2025 **Assistant Professor of the Practice**, Department of Mathematics, University of Notre Dame

Fall 2023 - Present **Adjunct Faculty**, Moreau College Initiative, Holy Cross College
Taught business calculus as part of the Moreau College Initiative, an academic collaboration for students incarcerated at Westville Correctional Facility.

2019-2020 **Visiting Professor**, Department of Mathematics, University of Notre Dame

Postdoctoral Awards, Honors, and Fellowships

2025 Organs and Origins Fellow, McGrath Institute for Church Life

2024 Organs and Origins Fellow, McGrath Institute for Church Life

2023-2024 Faculty Fellow, ND Learning Kaneb Center for Teaching and Learning

2023 Frank O'Malley Undergraduate Teaching Award

Predoctoral Awards, Honors, and Fellowships

Feb 2018 Provost's Distinguished Doctoral Fellow in Digital Learning

Mar 2017 Notre Dame's Advanced Teaching Scholar Certificate

Apr 2016 Notre Dame's Outstanding Graduate Student Teaching Award

Sep 2015 Notre Dame's Striving for Excellence in Teaching Certificate

May 2015 Notre Dame's Teaching Well Using Technology Certificate

Oct 2012 Mathematics Endowment Scholarship, West Chester University

Apr 2012 Inducted into Pi Mu Epsilon

Grants, Fellowships, and Other Funding

Grants

May 2023 Open Educational Resource Development Grant

2022-2023 Kaneb Center Course Design Academy

Dec 2021 MSCA (Movement to See Courage to Act) Planning Grant

Feb 2021 Resilience and Recovery Award

Publications

Peer Reviewed

Book Chapters

- Joyce, T., Pei, B., Cheng, A., Ambrose, A., & Mulholland, B. (2025). Enhancing Mastery-Based Learning an Analytical Approach to Providing Actionable Support. In S. Benoit (Ed.), Cultivating Flourishing Practices and Environments by Embracing Positive Education (pp. 79-118). IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-9466-3.ch003

Conference Proceedings

- Hsu, Kuang-Chen, Mulholland, Brian Ambrose, G. Alex, Szekelyhidi, Sonja

Mapes, Craker, Andrew (2021) "Flexible Assessment in Math During (and After) COVID" Association for Educational Communications and Technology (AECT) Conference.

Professional Talks

Extramural

Conferences

- *Reclaiming Learning: Student-Centered Math Pedagogy*
  The Science of Mathematics, Mathematics Education at Michigan Two-Year Colleges, Dowagiac, MI, October 2025.
- *Practical Pathways to Alternative Grading*
  The Science of Mathematics, Mathematics Education at Michigan Two-Year Colleges, Dowagiac, MI, October 2025.
- *Outwit, Outplay, Outlast: Game-Based Learning through Survivor*
  MathFest, Mathematical Association of America, Sacramento, CA, August 2025.
- *Creating a Sense of Belonging Among Incoming First-Year Students Through a Pre-College Online Learning Experience*
  OLC Innovate, Online Learning Consortium, Denver, CO, April 2024.
- *Do Math Like a Champion Today*
  Excellence in Teaching Conference, Institute for Educational Initiatives, University of Notre Dame, March 9, 2024.
- *Rising to the Challenge: Creating an Inclusive and Welcoming Learning Experience for Incoming First-Years*
  Notre Dame Digital Learning Summit, Notre Dame, Indiana, March 2023.
- *Near-Peer Mentoring in a Pre-College STEM Summer Program (ASCEND)*
  Annual Conference on the First Year Experience and Students in Transition, National Resource Center for the First Year Experience, Los Angeles, CA, February 3, 2023.
- *God the Geometer*
  'And It Was Very Good': On Creation, de Nicola Center for Ethics and Culture Fall Conference, Notre Dame, IN, November 10, 2022.
- *Flexible Assessment in Math During (and After) COVID*
  Association for Educational Communications and Technology Conference, Chicago, IL, November 5, 2021.
- *Your Mission Should You Choose To Accept It: How a Futuristic Narrative Framework Helped to Increase Math Discourse and Engagement in an Online Undergraduate Course*
  OLC Innovate, Online Learning Consortium, (Online) June 15, 2020.

Seminars

- *The Mathematical Mind of God*

Catholic Scientists Chapter Seminar Series, St. Vincent's College, Latrobe, PA October 2025.

Workshops

- *When Parallel Lines Meet: Geometry, Truth, and the God of Order*
  Faith and Reason Day, McGrath Science and Religion Initiative, Lafayette, LA, January 2026
- *When Parallel Lines Meet: Geometry, Truth, and the God of Order*
  Faith and Reason Day, McGrath Science and Religion Initiative, Lawrence, MA, October 2025
- *Engaging Students in the Classroom - An Active Learning Approach*
  Extending Partnerships: ND-Sidi Pedagogy/Research Workshop, Sidi Abdellah University, Algeria, October 2023.
- *Research with Undergraduate Students*
  Extending Partnerships: ND-Sidi Pedagogy/Research Workshop, Sidi Abdellah University, Algeria, October 2023.

Internal

Presentations

- *Enhancing Learning with Low-Stakes Assessment & Mastery Grading in Math During COVID*
  Notre Dame Board of Trustees Summer Meeting, June 10, 2021.

Workshops

- *Mission in Action*
  Moreau Spring Workshop Series, January 23, 2024.
- *Teaching in the Age of AI: Authentic Assessment*
  Teaching in the Age of AI Seminar Series, November 10, 2023.
- *Teaching in the Age of AI: Authentic Learning*
  Teaching in the Age of AI Seminar Series.

Panel Appearances

- *Beyond Teaching - Professional Development and Service Activities.*
  ND Start Professional Development Series, November 20, 2025.
- *Beyond Teaching - Professional Development and Service Activities.*
  ND Start Professional Development Series, March 19, 2025.
- *Teaching in the Age of AI Kickoff Panel*
  Teaching in the Age of AI Seminar Series, August 16, 2023.

Teaching and Advising

Overview

I teach a diverse range of courses, from mathematics in architecture to multivariable calculus, with a special focus on engaging students who may not typically be drawn to mathematics, including those in the arts, architecture, and business. My approach emphasizes critical thinking and active learning to make mathematical concepts more accessible and meaningful. Additionally, I am dedicated to curriculum development, crafting scaffolded learning experiences that support student success, and leveraging digital tools to enhance learning both in the classroom and online.

Regular Courses Taught

MATH 10130 Beginning Logic
- A terminal course designed for students in arts and letters to introduce them to formal logic.
- 60 students.
- Taught FA21.

MATH 10250 Elements of Calculus I
- A one-semester calculus course designed for students in arts and letters, architecture, or business.
- 60 students.
- Taught FA23 and SP24.

MATH 10270 Mathematics in Architecture
- A one-semester course designed for students in arts and letters or architecture that explores historical mathematics.
- 58 students.
- Taught SP20, SP21, SP22, SP23, SP24, SP25, SP26.

MATH 10550 Calculus I
- A first-semester calculus course designed for students in science and engineering.
- 40-75 students.
- Taught SP25, SU25, FA25.

MATH 10560 Calculus II
- A second-semester calculus course designed for students in science and engineering.
- 40-75 students.
- Taught SP24, SP26.

MATH 13187 Mathematics University Seminar
- A course for first-year students devoted to an introductory topic in mathematics, with an emphasis on the fundamentals of academic writing. My seminar explored the history of mathematics and how it evolved over time.
- 17 students.
- Taught SP20.

MATH 13560 Calculus I Problem Solving

- A one-credit course designed for students in the Mary E. Galvin Science & Engineering Scholars Program.
- 40 students.
- Taught FA25.

MATH 13560 Calculus II Problem Solving

- A one-credit course designed for students in the Mary E. Galvin Science & Engineering Scholars Program.
- 40 students.
- Taught SP24, SP26.

MATH 20180 Introduction to Mathematical Writing and History

- A writing-intensive course designed to introduce students to the history of mathematics and develop skills in LaTeX.
- 20 students.
- Taught SP21.

MATH 24213 Outwit, Outplay, Outlast: The Dynamics of Survivor

- A study abroad course that was jointly created with psychology to explore the mathematics of game theory and the psychology of decision-making in the context of the TV show "Survivor."
- 21 students.
- Taught SU24.

MATH 20550 Calculus III

- A third-semester calculus course designed for students in science and engineering.
- 75 students.
- Taught FA20, SP21, FA21, SP22, FA23.

MATH 20580 Introduction to Linear Algebra and Differential Equations

- A first look at linear algebra and introduction to ordinary linear differential equations designed for students in science and engineering.
- 60 students.
- Taught SU20, FA20, SU21, SU22, FA22.

MATH 46800 Directed Readings

- Designed to offer undergraduate students direction on readings not covered in the curriculum which relate to the student's area of interest.
- Taught SP22, FA22, SP20, SU23, SU25, FA25.

FYS 10101 Moreau First Year Experience

- The Moreau First Year Experience course fosters personal development by encouraging meaningful conversations on central human questions and contemporary topics, aligned with Notre Dame's mission to cultivate disciplined habits of mind, body, and spirit.
- Taught FA20, FA21, FA22, FA23, FA24, FA25.

FYS 10102 Moreau First Year Experience

- A continuation of FYS 10101.

- Taught SP21, SP22, SP23, SP24, SP25.

FYS 10601 Active Mathematics

- A bridge course for students preparing to take Elements of Calculus the summer before they start.
- Taught SU22.

Special Teaching

Veteran's College Math Readiness

- This is a 1-credit PreCollege course for veterans to help them identify their current mathematical skills and areas of growth.
- This is a joint venture with the Office of Veteran Affairs.
- Taught SU26

Moreau College Initiative

- I teach an introductory precalculus course and a business calculus course for the Moreau College Initiative. The Moreau College Initiative (MCI) is an academic collaboration between Holy Cross College and the University of Notre Dame, in partnership with the Indiana Department of Correction. College students incarcerated at Westville Correctional Facility earn credits towards a Holy Cross College Associate of Arts (AA) degree.
- Taught Business Calculus FA23.
- Taught Foundations for Calculus SU25

Curriculum Development

- **Veteran's College Math Readiness**
  - Created curriculum and digital components for a precalculus 1 credit course to help veterans identify their current mathematical skills and areas of growth.
  - Materials included incorporating transitional skills as well as mathematical skills.
  - This is a joint venture with the Office of Veteran Affairs.
- **Calculus I (MATH 10550) (Online)**
  - Created an online version of the Spring Calculus I course. Developed all the digital assets including lecture videos, polling questions, assessments, Canvas page, and active learning worksheets.
- **Summer Online Offerings**
  - Continued development and creation of digital assets of all 5 Math Summer Online offerings
  - See more details in Departmental Service
- **Calculus III (MATH 20550)**
  - Revised the course structure by transitioning from traditional exams to lower-stakes weekly quizzes and bi-weekly mini-exams, introducing a more scaffolded approach. Implemented Proficiency-Based Grading, allowing students time to identify and overcome weaknesses, which

resulted in positive feedback from students. Continued collaboration with chairs to develop the course.

- **Introduction to Linear Algebra and Differential Equations (MATH 20580)**
  - Adapted the course to incorporate Proficiency-Based Grading and a more intentional scaffolding system to support student learning.
- **Elements of Calculus**
  - Updated the course for business majors by incorporating principles of Inquiry-Based Learning and introducing coding skills.
- **Active Mathematics**
  - Designed a bridge course to prepare students for Calculus, focusing on an active and inquiry-driven learning approach to deepen understanding and critical thinking skills.
- **Introduction to Mathematical Writing and History**
  - Developed a course that provides a historical context of mathematics while highlighting contributions from underrepresented groups. The course also focuses on developing technical writing skills through the use of LaTeX, encouraging students to engage with the material both mathematically and historically.
- **Outwit, Outplay, Outlast: The Dynamics of Survivor**
  - Co-developed a course with Vanessa Chan (Psychology) that analyzes human behavior through mathematical and psychological perspectives. The course satisfies the WKIN requirement and serves as an elective for the NSBH major.
- **ASCEND**
  - I designed the ASCEND Project. A Scholarly Community Entering Notre Dame (ASCEND) is an online summer bridge program designed for incoming Notre Dame students in Science and Engineering to assess and refresh qualitative skills.

Program Coordination

- **ASCEND Director**
  2018 - Present
  Oversee content development and expansion of the ASCEND program, a bridge program for incoming first-year students to prepare for Notre Dame culture and the mathematics they need to succeed in their first-year courses. I organize the training of the coaches that serve in the program and run it each summer.

Department, College, and University Service

Department Service

- **Summer Online Course Coordinator, Department of Mathematics**
  2020 - Present
  Coordinate Summer Online courses, organize training sessions for graduate student instructors, and facilitate the development of online pedagogical skills.
- **Summer Online Graduate Fellow Program, Department of Mathematics**
  2022 - Present
  Establish a fellowship program for graduate students to prepare them for online teaching and digital library development, mentoring two graduate students on digital pedagogy.
- **Math Help Room Coordinator, Department of Mathematics**
  2020 - Present
  Manage the Math Help Room, coordinating schedules and hiring tutors to assist undergraduates with service course content. Collaborate with peer institutions on tutor training and liaise with the ND Learning Resource Center.
- **Graduate Student Partnership Observation Program Pilot**
  2025 - Present
  At the request of the mathematics department chair, I cocreated with the Kaneb Center an observation program for graduate students to provide early feedback for their teaching to assist in their professional development.
- **Letters of Recommendation**
  2020 - Present
  I have been writing letters of recommendation for both undergraduates and graduate students each year including letters for internships, medical school, postdoctoral programs, and jobs. I average 25 undergraduate letters a year and 5 graduate student letters a year.
- **Course Coordinator, Department of Mathematics**
  2021 - 2024
  Coordinate large multi-section service courses, including Elements of Calculus, Calculus III, and Linear Algebra & Differential Equations. Responsibilities include training TAs and instructors, overseeing assessment design, and managing course scheduling.
- **Undergraduate Committee Member, Department of Mathematics**
  2022 - 2023
  Serve on the Mathematics Department Undergraduate Committee, presented a report on Mastery-Based Grading, and contributed to curriculum changes.

College Service

- **The Rally Master Class, College of Science**
  April 2025
  These as "Master Classes" provide future students and families a preview

into their time as a student.

- **ND Start Panelist, College of Science**
  March 2025
  The aim is to discuss with newer faculty members the ways we have engaged in professional development and service as part of your career trajectories.

University Service

- **University Council of Academic Technology Committee Member, University of Notre Dame**
  2023 - Present
  Contribute to discussions on the implementation of new technologies for academic teaching, chairing the Learning Management System Subcommittee.
- **YuJa Pilot Program, University of Notre Dame**
  2023 - 2024
  Participate in testing the YuJa software as part of the decision-making process for a new video storage system, providing feedback and attending meetings.
- **Canvas Pilot Program, University of Notre Dame**
  2021
  Participated in the pilot testing of the Canvas LMS, providing feedback to support the LMS transition.
- **Dorm Faculty Fellow Pilot**
  2025-Present
  Have faculty engage with a specific dorm to provide mentorship to undergraduate students.
- **Faculty Pep Talks**
  2021-Present
  Visit undergraduate dorms to give talks to first-year students on how to prepare for their upcoming college experience.
- **Sorin Supper Club**
  2021-Present
  Students are invited to share a meal with my family where we discuss the intersections of our family and work lives.
- **Engaged Couple Mentors**
  2024-Present
  Mentor newly engaged Notre Dame couples as they prepare for marriage.
- **Bible Study Leaders**
  2025-Present
  Reflect with students on different passages from the Bible. Organized by Notre Dame Campus Ministry.

Professional Affiliations, Service and Leadership

Professional Affiliations

2025-Present **Member**, *Society of Catholic Scientists*

2020-Present **Member**, *Mathematical Association of America*

2014-Present **Member**, *American Mathematical Society*

Service

Nov 2025 **Conference Panel Moderator**, de Nicola Center for Ethics and Culture (dCEC) Fall Conference, Notre Dame, IN.

Nov 2024 **Conference Panel Moderator**, de Nicola Center for Ethics and Culture (dCEC) Fall Conference, Notre Dame, IN.

Nov 2023 **Conference Panel Moderator**, de Nicola Center for Ethics and Culture (dCEC) Fall Conference, Notre Dame, IN.

Nov 2022 **Conference Panel Moderator**, de Nicola Center for Ethics and Culture (dCEC) Fall Conference, Notre Dame, IN.

Nov 2021 **Conference Panel Moderator**, de Nicola Center for Ethics and Culture (dCEC) Fall Conference, Notre Dame, IN.

Consultancies

2021-2023 **Adapta Education**

Consulted on the for-profit endeavour to create an adapative system for high school level mathematics. I helped evaluate the accuracy and level of already created problem sets.

Community Work

2024 **Local Guest High School Speaker**

Presented at Multidisciplinary Academic Research Society (MARS), a student-led research club at Penn High School where scholars from different academic fields give short talks about what they do and assist students who may want to pursue that avenue of study.

2024 **Chess Club Coach**

Organize regular practice sessions and interactive lessons at Good Shepherd Montessori School.

2020 **Math Circles**

Math Circles are outreach programs for K-12 students focused on the enjoyment of mathematical problem solving. The weekly meetings are lively and interactive with problems that have a "low threshold" and "high ceiling." In 2020, I coordinated Math Circles.