SAM MACDONALD | Diversity Statement

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"Mathematics is as much an aspect of culture as it is a collection of algorithms."
— Carl Benjamin Boyer

INTRODUCTION

As mathematicians, it can be tempting to imagine our field as governed by some mystical force—a fundamental magnetism that exists beyond our control, pulling some students in while pushing others out at random. Such mystique shields us from the impact of our actions, obscuring the ways we perpetuate both inclusive and exclusionary practices and excusing us from the work of actively shaping our culture.

As I prepare to graduate, I see it as my responsibility to help cultivate the welcoming, diverse, and collaborative mathematical community I have been so fortunate to experience throughout my education. As both educator and researcher, I intend to spend the rest of my career promoting equity and inclusion in multiple, concrete ways: (1) my research in mathematics education, which seeks to better understand how systemic inequities shape students' experiences; (2) my commitment to carceral education, where I aim to expand access to mathematical learning for incarcerated students; (3) my mentorship and outreach, particularly with students who might not otherwise see themselves as belonging in mathematics; and (4) my ongoing development of equitable classroom practices and educational resources that help lower barriers to participation and success.

I AM AN EQUITY RESEARCHER

My research focuses on equity gaps and identity shifts among marginalized students in mathematics. When structures are designed to promote fairness and belonging, more students are able to enter, remain, and thrive within our field. For this reason, I see equity as a fundamental catalyst in maintaining diverse and healthy mathematical community.

I will keep this section brief, as much of what I might cover here is addressed in my research statement. Still, one key principle bears emphasizing: it has been essential for me to remain mindful of the potential pitfall of viewing marginalized students primarily through a "gap gazing" lens (Gutiérrez, 2008). Focusing only on deficits risks reifying narratives of failure and overlooking the assets, resilience, and contributions of the very students we aim to support. My research therefore strives to balance recognition of inequities with a commitment to highlighting students' identities, agency, and mathematical strengths.

MENTORSHIP AND OUTREACH

PRISON EDUCATION. In 2022, I contacted Dr. Kristin Pfabe, a professor at Nebraska Wesleyan University who had previously taught several classes in prison. Together, Dr. Pfabe and I reached out to the Reception and Treatment Center (RTC), a correctional facility just outside Lincoln, Nebraska, about co-teaching an Algebra I course on a volunteer basis, which we taught during the 2022–2023 school year. The following summer we taught a section of Intermediate Algebra for college credit.

The benefits of prison education cannot be overstated. Prisoners who participate in prison education programs are 43% less likely to be reincarcerated following their release (Davis et al., 2013), and taking just one course improves their odds of employment post-release increase by 13% (Davis et al., 2014). Yet the value extends beyond measurable outcomes: prison classrooms create rare spaces of intellectual community, dignity, and hope, where mathematics can become a vehicle for empowerment as well as knowledge.

At the same time, expanding access is not only about providing direct instruction, but also about challenging misconceptions, highlighting the humanity and potential of incarcerated learners, and advocating for systemic change. This is why I have sought opportunities to share these experiences with the wider mathematical community. In 2024, I gave a talk at the Joint Mathematics Meetings during the AMS Special Session on Ethics in Mathematics Classrooms, reflecting on the ethical dimensions of carceral education. I will be continuing this advocacy at JMM 2026 in the AMS Special Session on Communicating Mathematics.

NCUWM. My experiences in prison have shown me the importance of community and camaraderie in mathematics education, and I have striven to create such environments both within my department and beyond it. I was fortunate to serve for two years on the organizing committee for the Nebraska Conference for Undergraduate Women[1] in Mathematics (NCUWM). Through my work selecting student presentations and identifying potential speakers, I helped bring the conference's priorities to life—celebrating mathematicians from a wide range of racial, ethnic, and LGBTQ+ identities, as well as those navigating different family structures and educational trajectories. This process not only elevated diverse voices but also encouraged open, generous conversations about what it means to belong in the mathematics community.

MATHEMATICS TASK FORCES. Within UNL, I have also contributed to institutional change at the undergraduate level. Between 2022 and 2025, I served on UNL's First Year Mathematics Task Force, which develops strategies to reduce achievement gaps in our 100-level courses, from Intermediate Algebra through Calculus II. In this role, I advocated for inclusive and equitable pedagogical practices, which I outline in the following section. During the 2025—2026 academic year I will be serving on the Second Year Mathematics Task Force, which works with Calculus III, Differential Equations, and Linear Algebra courses.

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[1]Recently changed from 'Women' to 'Wisdom' in order to maintain funding.

GRADUATE STUDENT MENTORSHIP PROGRAM.   In addition to my teaching and outreach, I have been committed to fostering a welcoming environment and culture within the math department. As the organizer of the Math Department Graduate Student Mentorship Program, I was responsible for pairing incoming graduate students with more senior peers. Upper-year mentors play a crucial role in the experience of our first-year graduate students as they make the difficult transition to grad school, which can be especially challenging for students with non-traditional backgrounds or without access to graduate level coursework at their undergraduate institutions.

Before coordinating the program, I also participated as a mentor for several years. One of my mentees was an international student, and I supported them through many of the unexpected hurdles that come with moving to the United States—whether by serving as emergency chauffeur to a Western Union or simply sitting with them during a difficult phone call. Indeed, I have found that genuine mentorship is often about simply making time, showing up, and listening.

INCLUSIVE PEDAGOGY

EQUITABLE GRADING STRUCTURES.   Active learning has been shown to narrow achievement gaps for underrepresented students (Theobald et al., 2020) and to improve self-advocacy for students with learning disabilities (Pfeifer et al., 2023). Traditional high-stakes exams, by contrast, are among the largest generators of equity gaps in mathematics courses (Simmons & Heckler, 2020). In response, I am a strong advocate for mastery-based grading (MBG), a structure in which students are given multiple opportunities to demonstrate mastery of course concepts. Under this system, students earn credit only after showing sufficient understanding, which both rewards persistence and normalizes the learning process as one that involves mistakes, growth, and revision (Harsy et al., 2021).

Through my service on UNL's First Year Mathematics Task Force, I have worked to expand the use of MBG in our introductory courses. Beginning in Fall 2025, all sections of College Algebra at UNL have begun implementing a mastery-based format, and a pilot program for our Trigonometry course is currently being developed. These changes represent a significant structural shift aimed at reducing equity gaps across our most widely enrolled mathematics courses.

My teaching has also given me opportunities to support students from historically marginalized backgrounds directly. In Summer 2022, I served as an instructor for UNL's Upward Bound program, teaching high school students from underrepresented groups who would become the first in their families to attend college. Later, in my fourth year, I taught the Thompson Scholars section of Calculus I, a course designed for students supported by the Susan Thompson Buffett Foundation Scholarship—many of whom come from low-income or underrepresented backgrounds.

CREATING ACCESSIBLE RESOURCES.   I am also passionate about the development of open education resources (OERs)—free, online learning materials not restricted by copyright. OERs reduce financial barriers to learning (Nipa & Kermanshachi, 2020) and have been recognized as an equity strategy for higher education (Mann, 2018).

At UNL, OERs are used in the majority of our first year mathematics courses, and I have contributed to their development and improvement during my time here. Additionally, I have authored my own Modern Algebra textbook, intended for a first year graduate course, which is often used by UNL graduate students preparing for qualifying exams.

By creating resources that are both pedagogically sound and openly accessible, I aim to help dismantle structural barriers that too often limit who is able to participate fully in mathematics.

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