

# SAM MACDONALD | Curriculum Vitae

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*"He suffers from a deplorable excess of personality, especially for a mathematician."  
— John Hammond, Jurassic Park*

## RESEARCH INTERESTS

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My research in undergraduate mathematics education focuses on equity gaps and mathematical identity shifts among marginalized populations in first-year mathematics courses. I am also active in the prison education community and work to expand access to mathematics behind bars.

## EDUCATION

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### PH.D—MATHEMATICS

University of Nebraska—Lincoln

Advised by [Yvonne Lai](#).

August 2021—May 2026 (expected)

Lincoln, Nebraska

### M.S—MATHEMATICS

University of Nebraska—Lincoln

August 2021—May 2023

Lincoln, Nebraska

### B.A.—MATHEMATICS

Willamette University, Minor in Political Science

Advised by [Erin McNicholas](#).

August 2016—May 2020

Salem, Oregon

## HONORS & AWARDS

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### NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP (NSF GRFP)

Awarded 2023

University of Nebraska—Lincoln

Researching institutional barriers to implementing online educational resources in prison settings. Advised by Yvonne Lai. Research title: *Investigating systemic barriers to implementing a prison mathematics tablet-based curriculum*.

### PHIL HANNI STUDENT SCHOLAR AWARD

Awarded 2020

Willamette University [Institute for Continued Learning](#)

To recognize relevance and quality of an undergraduate thesis. Research title: *Gerry-meandering: Measuring Congressional District Meanderingness*.

## PUBLICATIONS (MATHEMATICS & EDUCATION)

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### DAILY AFFIRMATIONS: STRENGTHENING MARGINALIZED STUDENT IDENTITY IN FIRST YEAR COLLEGE CALCULUS COURSES

(2)

Preliminary report submitted to the Conference on Research in Undergraduate Mathematics Education (RUME) in September 2025.

### NON-MONOTONICITY OF CLOSED CONVEXITY IN NEURAL CODES

(1)

with Brianna Gambacini, Amzi Jeffs, and Anne Shiu (2021). *Vietnam Journal of Mathematics*, 50(2), 359–373.

[arXiv](#)

## RESEARCH EXPERIENCE

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### HHMI ADVANCING EQUITY GRANT

University of Nebraska—Lincoln

College of Arts & Sciences subaward from an award funded by the Howard Hughes Medical Institute (HHMI) Inclusive Excellence 3 initiative led by C. Brassil and B. Couch: Advancing equity in first and second year mathematics experiences. Gonzales, K., Lai, Y., & Zupan, A. Grant period: January 2024–August 2025. Total \$14,000.

Winter 2024—Summer 2025

Lincoln, Nebraska

### TPSE COME-IN GRANT

University of Nebraska—Lincoln

Transforming Post Secondary Education: Investigating and transforming first and second year mathematics experiences. Amman, K., Donsig, A., Gonzales, K., Lai, Y., & Zupan, A.; contract awarded through NSF INCLUDES DDLP: Creating Opportunities in the Mathematical Sciences through Equity and INclusion (COME-IN) EES-2304106, with PI S. Wolpert. Grant period: 2024–administratively terminated. Total \$15,000.

Winter 2024—Present

Lincoln, Nebraska

### REU—ALGEBRAIC COMPUTATIONAL BIOLOGY

Texas A&M University

Researched geometry of neural codes, analyzing distinctions between open and closed convex realizations. Studied embedding dimensions, constructed counterexamples, and disproved a published conjecture using tools from algebra, combinatorics, and geometry. Advised by [Anne Shiu](#).

Summer 2019

College Station, Texas

## EXPOSITORY WRITING

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### MODERN ALGEBRA: GROUPS, RINGS, MODULES, FIELDS

[Online textbook](#) covering first year graduate course in algebra, with emphasis on preparation for graduate qualifying exams. Updated periodically.

2022–Present

University of Nebraska—Lincoln

### MATHEMATICS OF REDISTRICTING

Written with Senior Capstone class. Topics included: Congressional district compactness measures, Markov chains, efficiency gaps, and ecological interference. Authored as a class, with the [third chapter](#) serving as my undergraduate thesis.

2019

Willamette University

### REAL ANALYSIS II TEXTBOOK SUPPLEMENT

Written with Real Analysis class. Supplement to inquiry based text used in course. Students wrote up each others solutions to textbook problems.

2019

Willamette University

## PRISON EDUCATION EXPERIENCE

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### INTERMEDIATE ALGEBRA

Reception and Treatment Center (RTC) & UNL

Taught through UNL as MATH 100A: Intermediate Algebra, this course was taught for credit at RTC, with students receiving 3 credits. Co-taught with [Dr. Kristin Pfabe](#).

Summer 2023

### ALGEBRA I

Reception and Treatment Center (RTC)

Volunteer Algebra I course, co-taught with Dr. Pfabe.

Fall 2022—Spring 2023

### MASCULINITY, GENDER, AND SEXUALITY

Oregon State Penitentiary (OSP) & Willamette University

Proposed by OSP resident; students read books on modern cultural developments in masculinity, gender, and sexuality. Invited to participate as a student.

Fall 2018

## THE POLITICS OF PUNISHMENT

Fall 2016

Oregon State Penitentiary (OSP) & Willamette University

Examined mass incarceration, racial disparities, and rehabilitation vs. punishment. Collaborated with incarcerated men at OSP to develop reform proposals presented to lawmakers and advocacy groups.

## TEACHING EXPERIENCE

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### MATH 104—APPLIED CALCULUS

Fall 2025

Instructor of Record

1 Section (3 Credits)

Online textbook: [Applied Calculus](#)

### MATH 106—CALCULUS I

Fall 2024

Instructor of Record, Recitation Instructor

1 Section, 1 Recitation (5 Credits)

[W. H. Thompson Scholar](#) Section; Online textbook: [Coordinated Calculus](#)

### MATH 208—CALCULUS III

Fall 2023

Recitation Instructor

2 Sections (2 Credits)

Online textbook: [Coordinated Multivariable Calculus](#)

### MATH 100A—INTERMEDIATE ALGEBRA

Summer 2023

Instructor of Record

1 Section (3 Credits)

Prison course (see next section for details)

### MATH 101—COLLEGE ALGEBRA

Spring 2023

Instructor of Record

1 Section (3 Credits)

Online textbook: [PreCalculus Mathematics at Nebraska](#)

### MATH 100A—INTERMEDIATE ALGEBRA

Fall 2022

Instructor of Record

1 Section (3 Credits)

Online textbook: [PreCalculus Mathematics at Nebraska](#)

### MATH 102—TRIGONOMETRY

Summer 2022

Instructor of Record

1 Section (2 Credits)

Online textbook: [PreCalculus Mathematics at Nebraska](#)

### MATH 107—CALCULUS II

Spring 2022

Recitation Instructor

2 Recitations (4 Credits)

Online textbook: [Coordinated Calculus](#)

### MATH 106—CALCULUS I

Fall 2021

Recitation Instructor

2 Recitations (4 Credits)

Online textbook: [Coordinated Calculus](#)

## PROFESSIONAL ACTIVITIES

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### SECOND YEAR MATHEMATICS TASK FORCE

Fall 2025—Spring 2026

Committee Member

University of Nebraska—Lincoln

The task force creates strategies to help reduce achievement gaps in our second level mathematics courses, including Calculus III, Differential Equations, and Linear Algebra.

### FIRST YEAR MATHEMATICS TASK FORCE

Fall 2022—Spring 2025

Committee Member

University of Nebraska—Lincoln

The task force creates strategies to help reduce achievement gaps in first year mathematics courses, from Intermediate Algebra to Calculus II.

## **NEBRASKA CONFERENCE FOR UNDERGRADUATE WOMEN IN MATHEMATICS**

### **Organizing Committee Member**

**NCUWM** is a conference for undergraduates that provides opportunities to present undergraduate research and connect with other young women mathematicians.

## **GRADUATE MENTORING PROGRAM**

### **Coordinator, Mentor**

Served as a mentor to junior graduate students in the Mathematics Department's Graduate Student Mentoring Program. Coordinated program during 2025–2026 academic school year.

## **GRADUATE STUDENT ORIENTATION SESSION LEADER**

### **Volunteer**

Facilitated informational sessions at the Mathematics Department GTA orientation. Sessions included: "Facilitating Group Work and Active Learning" and "Mastery Based Grading and Equitable Teaching Methods".

## **LINCOLN HIGH HOMEWORK CENTER**

### **Volunteer**

Worked as a counselor at the Math Resource Center providing tutoring services to students in precalculus, calculus, and contemporary mathematics courses.

## **MATH RESOURCE CENTER COUNSELOR**

### **Volunteer**

Worked as a counselor at the after school Lincoln High School homework center, providing tutoring services to students in precalculus and calculus courses.

## **NEBRASKA MATH DAY**

### **Volunteer**

Volunteered at UNL's **Math Day**, an annual program in which high school students from around Nebraska are invited to take part in mathematics workshops and competitions.

**Fall 2023—Spring 2025**

University of Nebraska—Lincoln

**Fall 2023—Present**

University of Nebraska—Lincoln

**August 2023, 2024, 2025**

University of Nebraska—Lincoln

**Spring 2023**

Lincoln High School

**Fall 2021- May 2023**

University of Nebraska—Lincoln

**2021, 2022, 2023**

University of Nebraska—Lincoln

## **PROFESSIONAL DEVELOPMENT**

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## **UNL COLLEGE OF ARTS AND SCIENCES GRADUATE WRITING RETREAT**

### **University of Nebraska—Lincoln**

Interdisciplinary writing retreat designed to support individuals in developing a sustainable writing practice. Provided mindful and sustainable approaches to daily writing with frameworks for integrating writing as part of professional development.

## **COMMUTATIVE ALGEBRA MARKET PREPARATION WORKSHOP (SUMMER CAMP)**

### **University of Nebraska—Lincoln**

Professional development workshop aimed at early-career mathematicians. Discussed the job application process, preparing for talks, interviews, and contract negotiations, and applying for grants.

## **PEDAGOGY COURSE**

### **University of Nebraska—Lincoln**

Completed a year-long pedagogy course titled "Teaching and Learning Mathematics at the Post-Secondary Level". Topics included constructivism, communities of practice, humanistic teaching perspectives, and equitable teaching.

**September 2025**

Ogallala, Nebraska

**August 2025**

Lincoln, Nebraska

**August 2022—May 2023**

Lincoln, Nebraska

## SELECTED PRESENTATIONS

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### STORIES, SYMBOLS, AND PRISON CELLS: COMMUNICATING MATHEMATICS BEHIND BARS

— Joint Math Meetings (JMM), AMS Special Session on Communicating Mathematics, [45 Minutes; forthcoming]

### FIFTY SHADES OF GRADE: EQUITY, MOTIVATION, AND OBEDIENCE IN TRADITIONAL GRADING PRACTICES

— Math RaMP through the Great Plains Alliance (GPA), Augustana University, November 2025 [forthcoming]  
— Graduate Student Seminar, University of Nebraska—Lincoln, January 2023 [50 Minutes]  
— Mathematics Education Doctoral Seminar, University of Nebraska—Lincoln, November 2022 [50 Minutes]  
— Mathematics Teaching Table, University of Nebraska—Lincoln, October 2022 [50 minutes]

### REICH WING MATHEMATICS: NAZISM, PHILOSOPHY, AND THE DESTRUCTION OF GERMAN SCIENTIFIC DOMINANCE

— Graduate Student Seminar, University of Nebraska—Lincoln, September 2025 [50 Minutes]

### FICTIONAL MATHEMATICS: A GLIMPSE INTO MATH IN FANTASY AND SCIENCE FICTION

— Graduate Student Seminar, University of Nebraska—Lincoln, April 2025 [50 Minutes]  
— Math RaMP through the Great Plains Alliance, Doane University March 2025 [30 Minutes]

### THE MIRACLE (OF) SUDOKU

— GST<sup>2</sup> Seminar, University of Nebraska—Lincoln, February 2025 [50 Minutes]

### BRINGING THE INSIDE OUT: WHAT PRISON EDUCATION CAN TELL US ABOUT OUR CLASSROOMS, CHARACTER, AND CULTURE

— Joint Math Meetings (JMM), AMS Special Session on Ethics in Mathematics Classrooms, January 2024 [20 Minutes]  
— Kansas Math Graduate Student Conference, University of Kansas, December 2023 [20 Minutes]  
— Graduate Student Seminar, University of Nebraska—Lincoln, August 2023 [50 Minutes]

### ARE WE THERE YET?: A FINITE GUIDE TO THE INFINITE

— Math RaMP through the Great Plains Alliance, Benedictine College, October 2023 [50 Minutes]  
— Math RaMP through the Great Plains Alliance, Wayne State University, April 2022 [50 Minutes]  
— Jim Albaugh Colloquium Series, Willamette University, March 2020 [50 Minutes]

### BE THERE OR $B^2$ : HUMOR THEORY AND ITS USES IN THE CLASSROOM

— Graduate Student Seminar, University of Nebraska—Lincoln, April 2022 [20 Minutes]

### THE COMPLEXITIES OF CONVEXITY: NON-MONOTONICITY OF CLOSED CONVEXITY IN NEURAL CODES

— Phil Hanni Virtual Conference, Willamette University, April 2020 [20 Minutes]  
— Jim Albaugh Colloquium Series, Willamette University, September 2019 [50 Minutes]  
— Texas A&M REU Conference, Texas A&M University, July 2019 [50 minutes]

### GERRYMEANDERING: MEASURING CONGRESSIONAL DISTRICT MEANDERINGNESS

— Jim Albaugh Colloquium Series, Willamette University, May 2019 [20 Minutes]

## PUBLICATIONS (CREATIVE WRITING)

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- (9) "Another Night in the Concrete Jungle", *If There's Anyone Left*<sup>†</sup>, forthcoming 2026.
- (8) "Remembering Dodem Ansibar", *Flash Fiction Online*<sup>†</sup>, forthcoming 2026.
- (7) "The Teething God", *Neon & Smoke*, forthcoming 2025.
- (6) "Your Campsite Report Card, as Written by the Bear About to Eat You", *Points in Case*, September 2025.
- (5) "A Mathematician's Guide to Being Normal", *This Exquisite Topology: A Collection of Happy Abstractions*, August 2025.
- (4) "Chicken Little", *The Colored Lens*, Issue 56, Summer 2025.
- (3) "Gone, But Not Forgotten", *Suburban Witchcraft Magazine*, Issue 8, March 2025,
- (2) "Artificial", *365 Tomorrows*, February 2025.
- (1) "The Abodale Hotel and Suites", *Killer Nashville Magazine*, February 2025.

<sup>†</sup> SWFA recognized professional market

## STUDENT QUOTES

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- “I’ve never felt truly comfortable in a math classroom until I entered this one.”  
—College Algebra Student
- “I have never had an instructor who so willing gave his best each and every class. Sam went above and beyond my expectations in being available to offer assistance in our course work and answer questions. **My success in this course is primarily because of his dedication to giving every opportunity to succeed.**”  
—Intermediate Algebra Student
- “Sam. **Just the way he teaches is phenomenal.** He is definitely one of the best math TA’s and just in general teachers I’ve had. He is almost always available to help with questions and is very good at getting back to emails. And just the fact that **he truly does show that he wants us to learn and to succeed.**”  
—Calculus II Student
- “Sam was a very welcoming and easy person to talk to. I can have a hard time asking for help at times, and **his communication skills allowed me to release the fear of asking questions.** I enjoyed how he taught, definitely made learning easy and possible.”  
—College Algebra Student
- “The strength of this course comes from the teachers. Their ability to help us through our struggles makes the material easier to interpret. **You changed my view of math and education as a whole.**”  
—Incarcerated Intermediate Algebra Student
- “Sam always came with a positive but honest attitude, was very understanding, and **truly cared about our success.**”  
—Calculus III Student
- “There is nothing Sam could improve on, and any attempt to imply that he can is complete blasphemy.”  
—Calculus I Student