

JACOB COOPER

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EDUCATION

Arizona State University

B.S. in Mathematics

August 2021 - May 2024

Cumulative GPA: 4.2

- Summa Cum Laude
- Dean's List, 6/6 semesters
- Recipient of the 2024 Charles Wexler Mathematics Prize.
- Recipient of the Mouer Award
- Inducted into ASU's Chapter of Phi Beta Kappa

RESEARCH

Science Education Research

Undergraduate Research Assistant

Dr. Molly Simon

August 2023 - Present

Students' experience in introductory science classes can change their attitudes towards science as a field. I am currently analyzing survey data from three sections of an introductory geology class to determine if there is evidence that video intervention can increase students' sense of belonging and decrease student's psychological distance to science.

Algebraic Geometry Research

Undergraduate Research Project (Submitted to the Proceedings of the AMS)

Dr. Jonathan Montaña

August 2023 - Present

Binomial edge ideals are ideals of a polynomial ring, constructed by taking the edge pairings of a simple graph. I am working with another mathematics student on their Barrett Honor's Thesis. We are using Macaulay 2, results from algebraic geometry, and hand calculations to explore the properties of these ideals and to find connections between the algebraic and graphical structure.

PROFESSIONAL DEVELOPMENT

Research Presentation

Southwestern Undergraduate Mathematics Research Conference

University of New Mexico

April 2024

- Presented my research on the multidegrees of Binomial Edge Ideals as an undergraduate student representing Arizona State University along with my partner, Ethan Leventhal.

PROJECT

Hyperbolic Geometry Project

Final Project - MAT 598

Dr. Julien Paupert

December 2022

- Study and analysis of binary quadratic forms and their connection to the geometry of the upper-half plane.
- Connection of the behavior of modular forms to its corresponding group structure.

Numerical Analysis Project

Final Project - MAT 423

Dr. Malena Espanol

December 2022

- Development of a spectral subtraction method in MATLAB for de-noising audio.
- Use of fast Fourier transform in signal processing methods.

TEACHING

Instructional Aide / Grader

School of Mathematical and Statistical Sciences

Aug 2022 - Present

Arizona State University

- Aided in critical classroom duties for a variety of lower division mathematics classes.
- Worked with students with highly-varied mathematical abilities and backgrounds.

Substitute Teaching Assistant

School of Earth and Space Exploration

Aug 2023 - Dec 2023

Arizona State University

- Assisted in the teaching and setup of an introductory astronomy lab on three separate occasions.
- Regularly attended TA meetings and shadowed another TA throughout the duration of the semester.

Class Supervisor / Lead Tutor

Joaquín Bustoz Math Science Honors Program

May - Jul 2023, 2024

Arizona State University

- Supervised 27 high school students taking college precalculus during an intensive, 6-week summer program.
- Led and coordinated a group of four tutors and two success coaches.
- Created vital class materials and quizzes in LaTeX.

EXTRACURRICULAR ACTIVITIES

Secretary, Treasurer - Math Bio Club

School of Mathematical and Statistical Sciences

May 2023 - Present

Arizona State University

- Acted as secretary and treasurer for a club bringing together students and faculty in the field of Math Biology.
- Assisted in the planning, funding, and execution of club events.

Cofounder - Math Physics Club

School of Mathematical and Statistical Sciences

Aug 2023

Arizona State University

- Helped to found a club to bridge the gap between students in physics and mathematics at ASU

Vice President, Treasurer, Event Coordinator - Astronomy Club

School of Earth and Space Exploration

Aug 2023 - Present

Arizona State University

- Helped to plan events and meetings of one of the largest clubs on ASU campus, with over 500 members.
- Created and maintained budgets and requests for upwards of \$2000 for events, collaborations, and equipment
- Performed efficient setup and alignment of a variety of telescopes.
- Researched targets of observation to provided skill/experience-appropriate information to attendees.

Volunteer - Homecoming Block Party and ASU Open Door

School of Mathematical and Statistical Sciences

Oct 28, 2023 and Feb 24, 2024

Arizona State University

- Assisted the Mathematics department at Arizona State University homecoming.
- Volunteered for two shifts, arriving early to help set up, and staying late to help break down.
- Learned and memorized a card trick to perform with a partner for the duration of the event.

SKILLS

Computer Languages

Java, MATLAB, LaTeX, Python, Macaulay 2

Human Languages

English (Native), Spanish (Intermediate), ASL (Beginner)

General Skills

Typing Speed of 100 WPM, Microsoft Office