Allison Cruikshank

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Research Interests

Mathematical Biologist interested in the mathematical modeling of human physiological processes. Plan to obtain a career in industry working in phamaceutical or biotechnology based companies.

Education

- **Duke University** Expected May 2026
  PhD in Mathematics, Advisor: Dr. Mike Reed

- **University of Nebraska-Lincoln** May 2021
  BS in Mathematics and Biochemistry
  - Highest Distinction
  - Thesis: A Mathematical Model of Pancreatic Cancer Growth and Response to Treatment
  - Advisor: Dr. Huijing Du

Publications

- Archer Harrold*, Allison Cruikshank*, Bryan Penas, Rebecca Roston. (2022) Introducing High School Biology Students to Biochemistry with a Short, Content-Oriented Intervention. *Biochemistry and Molecular Biology Education.* Under Revision. * indicates equal author contribution.
- Madison Albert, Allison Cruikshank, Kausik Das, Luoding Zhu, Jared Barber. (2022) Image Digitization and Calculation of forces for osteocyte viscoelastic networks. *Mathematics Exchange.* Submitted.

Teaching

- **Duke University** August 2022-Present
  Instructor of Record
  Math 111L: *Laboratory Calculus I*
  Gave lectures three days per week and co-designed exams with the course coordinator (Shira Viel) and a team of graduate instructors.

- **Duke University** August 2021-December 2021
  Teaching Assistant
  Math 111L: *Laboratory Calculus I*
  Led a discussion section with a partner twice a week. Facilitated group work, answered questions, gave mini-lectures, and graded exams.

- **University of Nebraska-Lincoln** August 2019-May 2020
  Learning Assistant
  Math 101: *College Algebra*
  Assisted in student learning in the classroom and prepare active review sessions.

Outreach and Service

- Association for Women in Mathematics (AWM) Present
  Chapter Officer, Duke Mathematics Department
  Coordinate community-building events, talks, and academic enrichment opportunities.
- Society for Industrial and Applied Mathematics (SIAM) Present
  Chapter Officer, Duke Mathematics Department
  Organize community-building events, research talks, and career development opportunities.
- Triangle Area Graduate Mathematics Conference (TAGMaC) Present
  Co-organizer, Duke-UNC-NCSU Mathematics Departments
  Rotating conference for mathematics graduate students in the NC Triangle area, sponsored by the AMS and SIAM chapters at Duke, UNC Chapel Hill, and NC State. Co-organized the Fall 2021 TAGMaC.
- Triangle Contest in Mathematical Modeling (TriCoMM) Present
  Co-organizer, Duke Mathematics Departments
  Local mathematical modeling contest for undergraduate students based on the international Mathematical Contest in Modeling (MCM). Helped organize logistical meetings and the contest.
- Undergraduate Program Committee for the Mathematics Department Undergraduate
  Member, University of Nebraska-Lincoln Mathematics Department
  Provided a student perspective on a variety of processes and aspects in the math department (e.g. curriculum, contents of courses).
- Mathematical Honors Society, Pi Mu Epsilon Undergraduate
  Officer, University of Nebraska-Lincoln Mathematics Department
  Handled induction fees and help with the annual induction ceremony.

Talks and Conferences

- Nebraska Conference for Undergraduate Women in Mathematics Spring 2021
  Research Talk on undergraduate thesis work in pancreatic cancer growth and response to radiotherapy.
- Indiana REU 2020 Conference July 2020
  Presented a talk with partner, Jacob Woodrome, on our 3D steady and near-steady state cancer cell model.

Scholarships and Awards

- Schuler Miles CAS Fellowship, *UNL College of Arts and Sciences* ($6,500) Fall 2020
- D & F Eastman Scholarship, *UNL Mathematics Department* ($12,000) Fall 2018- Spring 2021
- David Distinguished Scholar, *UNL* ($14,000) Fall 2017- Spring 2021

Undergraduate Research and Other Experience

- IUPUI Mathematics REU `Summer 2020`
  Created a steady and near-steady state cancer cell model with Jacob Woodrome under the mentorship of Dr. Jared Barber
- A computational study of partial differential equations `Fall 2020`
  Implemented Fourier series and partial differential equations in Matlab as an honors project for MATH 424 with Dr. Adam Larios
- Directed Reading Program `Spring 2020`
  Research on methods used in mathematical biology
- Participant in the math modeling competition, SCUDEM `Fall 2018`
  Created a mathematical model to represent a population of snakes using differential equations

Skills

- Matlab (proficient)
- Latex (proficient)