

Sophie Louise Larsen

(they/them)

Urbana, IL

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Curriculum Vitæ

EDUCATION

Ph.D. student, PEEC (Program in Ecology, Evolution, and Conservation Biology), University of Illinois at Urbana Champaign, IL, Jan. 2023 - 2025 (expected)

Advisor: Pamela Martinez (School of Molecular and Cellular Biology, Department of Statistics). Population dynamics of infectious diseases, from vaccine inequity to variants of concern. Transfer from the Ph.D. program in the Department of Mathematics.

Master of Science, Mathematics, University of Illinois at Urbana Champaign, IL, Jan. 2021 - May 2022

Advised by Pamela Martinez as a student in the Ph.D. program in Mathematics from Jan. 2021 - Dec. 2022.

Bachelor of Science, Mathematics, University of Washington, Seattle, WA, Sep. 2016 - Jun. 2020

Minors in Norwegian and the Comparative History of Ideas.

HONORS

List of Teachers Ranked as Excellent, Spring 2021, Fall 2021, Spring 2022, Fall 2022

Barbara Sando Scholarship in Mathematics, awarded for Winter/Spring 2020

Phi Beta Kappa, inducted Spring 2019

Annual Dean's List, University of Washington, 2016-17 and 2017-18

RESEARCH EXPERIENCE

PhD Student, Pamela Martinez's Lab, University of Illinois at Urbana-Champaign, Jun. 2021 - present

- Advised by Prof. Pamela Martinez
- Modeling social inequity and COVID-19 transmission in collaboration with Prof. Ayesha S. Mahmud at UC Berkeley and Prof. Marc Lipsitch at the Harvard T.H. Chan School of Public Health
- Modeling adapted booster strategies, immune history, and COVID-19 transmission in collaboration with Prof. Alicia Kraay at UIUC, funded by the World Health Organization
- Transmission dynamics of monkeypox with Alejandro Pérez Velilla (UC Merced, Cognitive and Information Sciences), Henry Lopez (University of Iowa, Dept. of Psychology), and Sarah Kovalaskas (Emory, Dept. of Anthropology)
- Advising several undergraduate students in the lab

Undergraduate Volunteer, Yager Group, University of Washington, Oct. 2017 - Dec. 2018

- Developed a combinatorial model to better understand the biophysical chemistry of a diagnostic assay
- Ran DNA amplification reactions (PCR/iSDA) and used gel electrophoresis to visualize results

PUBLICATIONS

Larsen, S. L., Shin, I., Joseph, J., West, H., Anorga, R., Mena, G. E., ... & Martinez, P. P. (2023). Quantifying the impact of SARS-CoV-2 temporal vaccination trends and disparities on disease control. medRxiv, 2023-02.

WORKSHOPS AND CONFERENCES

Models of Infectious Disease Agent Study (MIDAS) Network Annual Meeting, Bethesda, Maryland, September 2022

- Received funding from MIDAS to attend the annual meeting and present a poster on social inequity and COVID-19 transmission

Complexity-GAINS International Summer School, Vienna, Austria, July 2022

- Two week, NSF-funded workshop on disintegration of societies: quantitative modeling of complex socio-behavioral systems. Co-organized by the Santa-Fe Institute.
- Project on monkeypox transmission dynamics across sexual networks with Alejandro Pérez Velilla (UC Merced, Cognitive and Information Sciences), Henry Lopez (University of Iowa, Dept. of Psychology), and Sarah Kovalaskas (Emory, Dept. of Anthropology). Focus on potential impacts for sexual minority populations including stigmatization.

Applied Math Graduate Seminar, University of Illinois at Urbana-Champaign, April 2022

- 25-minute research talk on social inequity and COVID-19 transmission

Bohrer Memorial Student Workshop in Statistics, University of Illinois at Urbana-Champaign, April 2022

- Poster session on social inequity and COVID-19 transmission

MicroERA, University of Illinois at Urbana-Champaign, April 2022

- Research speed talk on social inequity and COVID-19 transmission

INDEPENDENT STUDY

Math Special Topics, University of Washington, Winter/Spring 2019

- Completed an independent study of *Differential Topology* (Guillemin & Pollack) under the supervision of Dr. Lucas Braune
- Topics included immersions, submersions, transversality, homotopy, Sard's Theorem and Morse functions, manifolds with boundary, intersection theory mod 2, winding numbers, and the Jordan-Brouwer Separation Theorem

Math Special Topics, University of Washington, Fall 2018

- Completed an independent study of *An Illustrated Theory of Numbers* by Martin Weissman, under the supervision of Prof. Bianca Viray (Parts I and II, Ch. 0-8)

TEACHING EXPERIENCE

Teaching Assistant, University of Illinois at Urbana-Champaign, Jan. 2021 - Present

- Fall 2022: one Merit discussion section of Calculus 2 (Math 231). Wrote worksheets/mock exams and facilitated complex problem solving and collaboration.
- Spring 2022: two discussion sections of Calculus 2 (Math 231). Graded worksheets and helped develop exams.
- Fall 2021: two discussion sections of Calculus I (Math 221). Graded worksheets and exams.
- Spring 2021: two discussion sections of Calculus for Business (Math 234)

Math Grader, University of Washington, Winter/Summer Quarters 2019, Summer Quarter 2020

- Graded homework with feedback for one section of Introduction to Mathematical Reasoning (MATH 300) in Summer 2019, and again in Summer 2020
- Graded homework for one section of Linear Analysis (MATH 309) in Summer 2020
- Wrote homework keys and graded homework for two sections of Linear Analysis (MATH 309) in Winter 2019

Volunteer Peer-Mentor, University of Washington, Spring/Fall 2018, Fall 2019

- Trained in research-based pedagogical methods (Spring 2018)
- Facilitated problem-solving and study skill development in a weekly discussion workshop for General Chemistry (CHEM 142), under the supervision of a graduate teaching assistant (Fall 2018)
- Facilitated an additional workshop with a graduate student in Fall 2019
- Peer-mentors are part of the UW STEM-Dawgs program, whose purpose is to foster a sense of community within large undergraduate lecture courses, and address disparities in performance for women, underrepresented groups, and first-generation college students.

SERVICE

Graduate Employees Organization, 2021 - Present

- With Disability Caucus, which advocates for disabled students and workers on campus, developed a workshop on disability and the accommodations process aimed at teaching assistants, staff, and faculty.
- The workshop has run in multiple departments including as part of math department TA training.

Accommodation Working Group, August 2022 - October 2022

- Contributed to early stages of a working group in the Department of Mathematics to develop recommendations of best practices for accommodating disabled students in the graduate program

Undergraduate Affairs Committee, Fall 2021 - Spring 2022

- Served on the committee as the graduate representative
- Helped make decisions about undergraduate curriculum and programs

ADDITIONAL SKILLS

LaTeX

R and RStudio

Python

Norwegian - professional working proficiency (approximately B2 on the CEFR scale; writing sample available upon request)

PROFESSIONAL MEMBERSHIPS

MIDAS Network

Association for Women in Mathematics

SIGHPC