

# Ana Wright

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## EDUCATION

### University of Nebraska–Lincoln, Lincoln, Nebraska, USA

- Ph.D. in Mathematics
  - Dissertation Title: Gordian Distance and Complete Alexander Neighbors
  - Advisors: Mark Brittenham and Alex Zupan
- M.S. in Mathematics

Expected May 2023

May 2019

### Willamette University, Salem, Oregon, USA

- B.A. in Mathematics and Spanish with a minor in English
  - Cumulative GPA: 3.94, Mathematics Major GPA: 4.0, Spanish Major GPA: 4.0

May 2017

## WORK EXPERIENCE

### University of Nebraska–Lincoln

- Graduate Teaching Assistant
  - Aug. 2017 - Present
- Associate Convener for Math 103 College Algebra and Trigonometry
  - Fall 2020 - Spring 2021
  - Organized weekly instructor meetings, created a course schedule, wrote exams
  - Oversaw 11 sections in the fall and 4 sections in the spring taught by 14 instructors
- Graduate Teaching Assistant for Polymath Jr.
  - Summer 2021 & 2022
  - Served as a graduate teaching assistant for Alex Zupan's projects for the online undergraduate research program Polymath Jr. supported by NSF grant DMS-2005518.
- Graduate Research Assistant
  - Dec. 2020 - Jan. 2021
  - Coded and summarized interviews for a project in computer science education funded by a Computer Science for All grant from the National Science Foundation called Adapt, Implement, and Research at Nebraska (AIR@NE) DUE-1837476 with Wendy Smith and Sally Ahrens

### Willamette University

- Math Tutor and Preceptor for Modeling With Calculus (MATH 140), Linear Algebra (MATH 253), and Multivariable Calculus (MATH 249)
  - Nov. 2013 - May 2017
- Grader for the proofwriting course Foundations of Advanced Math (MATH 251W)
  - Nov. 2016 - May 2017
- Undergraduate Researcher for the Willamette University Mathematics Research Experience for Undergraduates (REU)
  - June 2016 - July 2016
  - Project: Mixing Times of the Generalized Rook's Walk
  - Advisor: Peter Otto

## AWARDS

### Ben Nolting Award

Annual award for one or two graduate students in mathematics at UNL recognizing work in diversity and inclusion

2021

### Linda Bors Fellowship

Annual fellowship awarded to 3 graduate students in mathematics at UNL based on excellence of scholarship

2020

### Chester F. Luther Mathematics Scholarship

Annual scholarship awarded to 4-6 undergraduate students at Willamette University for excellence in mathematics

2016

<b>INSTRUCTOR OF RECORD</b>	<b>Teaching Experience</b>	
	<b>MATH 101 College Algebra</b> In Fall 2021, I taught this class as part of the federal outreach and student services program TRIO meant to identify and provide services to eligible students from disadvantaged backgrounds. The class meets 5 times per week rather than the typical 3 and has extra office hours and a smaller class size than other sections. I also taught a standard section of this course in Fall 2018.	Fall 2018 & Fall 2021
	<b>MATH 103 College Algebra and Trigonometry</b> In Fall 2020, this class used a flexible hybrid model to accommodate for social distancing regulations due to COVID-19. I also taught a standard, in-person section of this course in Fall 2019.	Fall 2019 & Fall 2020
	<b>MATH 104 Applied Calculus</b>	Summer 2019
	<b>MATH 106 Calculus I</b> This was an online class due to COVID-19.	Summer 2020
	<b>MATH 203 Contemporary Mathematics</b>	Spring 2019
<b>TEACHING ASSISTANT EXPERIENCE</b>	<b>MATH 300 Mathematics Matters</b> This course is for pre-service elementary school teachers and the last six weeks of this course were administered online due to COVID-19.	Spring 2020
	<b>MATH 314 Linear Algebra</b>	Spring 2022
	<b>MATH 106R Calculus I Recitation</b> I taught two recitation sections each semester Fall 2017 and Spring 2018.	Fall 2017 & Spring 2018
	<b>MATH 107R Calculus II Recitation</b>	Summer 2018
<b>GRADING EXPERIENCE</b>	<b>MATH 104 Applied Calculus</b> Graded midterms and final exam	Fall 2019 & Fall 2022
	<b>MATH 856 Differential Topology</b> Graded and gave feedback on student proofs on problem sets	Spring 2022
	<b>MATH 871 Topology I</b> Graded and gave feedback on student proofs on problem sets	Fall 2022
	<b>Mentorship Experience</b>	
<b>UNDERGRADUATE MENTORSHIP</b>	<b>Polymath Jr: Symmetric Union Presentations for Ribbon Links</b> This undergraduate research project was held online and organized by Alex Zupan. Meetings were conducted via Zoom and other communication was conducted via email and Discord. I curated student proofs for a solution guide to problem sets on the background material. I participated in weekly progress meetings with 24 undergraduate students and held weekly office hours.	Summer 2022
	<b>Polymath Jr: Knotted Surface Tabulation Via Tri-plane Diagrams</b> This undergraduate research project was held online and organized by Alex Zupan. Meetings were conducted via Zoom and other communication was conducted via email and Discord. I participated in weekly progress meetings with 22 undergraduate students. I led weekly research meetings with 7 of the undergraduate researchers. I also held weekly office hours and helped compile results from the project.	Summer 2021
	<b>Learning Assistant Math 103 College Algebra and Trigonometry Pedagogy Leader</b> I ran biweekly course content meetings with the undergraduate learning assistants in Math 103 to go over the course content and related pedagogical issues.	Fall 2020 - Spring 2021

	<b>Directed Reading Program</b> I met weekly with an undergraduate student as she worked through An Interactive Introduction to Knot Theory by Inga Johnson and Allison Henrich.	Spring 2020
<b>GRADUATE MENTORSHIP</b>	<b>Landscapes Seminar</b> Landscapes seminar is a weekly seminar of talks and a panel to help 11 first year grad students prepare to ask a professor to be their advisor and begin research. I organized the seminar in Spring 2021.	Spring 2021
	<b>Topology Qualifying Exam Workshop</b> I organized previous topology qualifying exam problems into a database, which can be sorted by topic and helped 3 graduate students prepare for the exam.	Jan. 2021
	<b>Peer Mentorship Program</b> I served as a peer mentor to a first year graduate student.	Aug. 2019 - May 2020
	<b>Publications, Presentations, and Travel</b>	
<b>PAPERS</b>	<i>Gordian Distance and Complete Alexander Neighbors</i> arXiv:2210.07728 [math.GT] (Preprint) (with Chris Anderson, Kenneth L. Baker, Xinghua Gao, Marc Kegel, Khanh Le, Kyle Miller, Sinem Onaran, Geoffrey Sangston, Samuel Tripp, and Adam Wood) <i>L-space knots with tunnel number <math>&gt;1</math> by experiment</i> Experimental Mathematics (2021) 1-15 (with Ben Clingenpeel, Zongzheng (Jason) Dai, Gabriel Diraviam, Kareem Jaber, Ziyun Liu, Teo Micklethun, Haritha N, Michael Perry, Moses Samuelson-Lynn, Eli Seamans, Krishnendu Kar, Nicole Xie, Ruiqi Zou, and Alex Zupan) <i>Symmetric Union Presentations of Ribbon Knots</i> (In Preparation) (with Wolfgang Allred, Manuel Aragón, Zack Dooley, Alexander Goldman, Yucong Lei, Isaiah Martinez, Nick Meyer, Devon Peters, Scott Warrander, and Alex Zupan) <i>Tri-Plane Crossing Number of Unknotted Surfaces and CH-Diagram to Tri-Plane Diagram Conversions</i> (In Preparation)	
<b>PRESENTATIONS</b>	<b>“A Topological Journey Through Spaces and Knots”</b> (Invited Speaker) <ul style="list-style-type: none"> <li>Math RaMP at Spelman College, online, as part of the Great Plains Alliance</li> </ul>	Mar. 2021
	<b>Non-Euclidean Geometry Presentation</b> <ul style="list-style-type: none"> <li>I visited an undergraduate geometry class at Nebraska Wesleyan University and gave a talk about non-euclidean geometry, introducing hyperbolic and elliptic geometry.</li> </ul>	Oct. 2021
	<b>“A Journey Through Hyperbolic Space”</b> (Invited Speaker) <ul style="list-style-type: none"> <li>Jim Albaugh Mathematics Colloquium at Willamette University, online</li> </ul>	Apr. 2020
	<b>“Senior Thesis: Mountain Graphs in Origami Crease Patterns”</b> <ul style="list-style-type: none"> <li>Jim Albaugh Mathematics Colloquium at Willamette University</li> </ul>	Apr. 2017
	<b>“Mixing Times for the Generalized Rook’s Walk”</b> <ul style="list-style-type: none"> <li>Nebraska Conference for Undergraduate Women in Math</li> <li>Joint Mathematics Meetings: Contributed Papers in Probability and Statistics I and Student Poster Session</li> <li>Jim Albaugh Mathematics Colloquium at Willamette University</li> </ul>	Feb. 2017 Jan. 2017 Dec. 2016
<b>CONFERENCES AND TRAVEL</b>	<b>Max Planck Institute of Mathematics (2 month visit)</b> Bonn, Germany	Sept.-Oct. 2022
	<b>Séminaire de Mathématiques Supérieures (Mathematical Sciences Research Institute Summer School)</b> Vancouver, Canada	Jul. 2022
	<b>Winter Trisectors Workshop</b> Online workshop	Dec. 2020
	<b>Kirby Calculus and 4-manifolds UT Austin Minicourse</b> Online minicourse	Jul. 2020

	<b>Heegaard Splittings and Dehn Surgery UT Austin Minicourse</b>	Online minicourse	Jul. 2020
	<b>Topology Student's Workshop</b>	Online workshop	Jul. 2020
	<b>Joint Mathematics Meetings</b>	Denver, Colorado	Jan. 2020
	<b>Midwest Geometry Conference</b>	Ames, Iowa	Sep. 2019
	<b>Perspectives on Dehn Surgery</b>	Providence, Rhode Island	Jul. 2019
	<b>Georgia Topology Conference</b>	Athens, Georgia	May 2019
<b>LOCAL TALKS (UNL)</b>	<b>Groups, Semigroups, and Topology (GST) Seminar</b>		
	• "End Spaces and Compact Closures" (online)		Apr. 2022
	• "Maps From 3-Manifolds to 4-Manifolds That Induce Isomorphism on $\pi_1$ by Hongbin Sun and Zhongzi Wang (Part 1)" (online and in person)		Oct. 2021
	• "Knot Groups and Colorability" (online)		Mar. 2021
	• "Alexander Polynomials and Gordian Distance" (online)		Oct. 2020
	• "Efficient Computation of the Kauffman Bracket"		Feb. 2020
	• "Introduction to Foliations"		Nov. 2019
	<b>Graduate Students Talking in Groups, Semigroups, and Topology (GST)<sup>2</sup> Seminar</b>		
	• "Diagrams of Knotted Surfaces"		Oct. 2021
	• "Alexander Polynomials and Gordian Distance" (online)		Sept. 2020
	• "To Knot or Not to Knot"		Feb. 2020
	• "Conveniences of Alternating Diagrams"		Oct. 2019
	• "Algorithms Transforming Links into Closed Braid Form"		Mar. 2019
	<b>Matemáticas en español Seminar</b>		
	• "Nudos de cinta" (Ribbon Knots) (online)		Sept. 2022
	• "Pruebas sin palabras" (Proofs Without Words) (online)		Feb. 2022
	• "Introducción a superficies anudadas" (Introduction to Knotted Surfaces)		Oct. 2021
	• "Geometría elíptica" (Elliptic Geometry)		Sept. 2021
	• "Introducción a la característica de Euler" (Introduction to the Euler Characteristic) (online)		Feb. 2021
	• "Grafos montes en patrones de pliegues origami" (Mountain Graphs in Origami Crease Patterns) (online)		Sept. 2020
	• "Introducción a la geometría hiperbólica" (Introduction to Hyperbolic Geometry) (online)		Apr. 2020
	• "Cruces múltiples en diagramas de nudos" (Multi-crossings in Knot Diagrams)		Oct. 2019
	• "La magia de flexágonos" (The Magic of Flexagons)		Sept. 2019
	• "Introducción a la teoría de nudos" (Introduction to Knot Theory)		Mar. 2019
	<b>Graduate Student Seminar</b>		
	• "Using Graphs to Think About the Jones Polynomial" (online)		Apr. 2021
	• "Hyperbolic Geometry and Topology"		Sept. 2019
	• "Heegaard Splitting Stability"		Dec. 2018
	<b>4-Manifolds Reading Seminar</b>		
	• "Trisections of 4-Manifolds"		Sept. 2019

## Mathematics Literature

- “Thin Position of Knot Diagrams and Essential Planar Surfaces in Knot Complements”

June 2018

## Involvement

### OUTREACH

#### Matemáticas en español

Feb. 2019 - Present

I co-founded a Spanish math seminar with Amadeus Martin and organized it from the beginning. It is meant for undergraduate level talks for students and faculty of all Spanish skill levels to practice communicating math in Spanish.

#### Math Club

Nov. 2021

I gave a talk and led an activity about flexagons in the undergraduate math club at UNL.

#### Great Plains Alliance

Mar. 2019

I served in a support role for the speaker in a Great Plains Alliance Talk at Wayne State College. The Great Plains Alliance allows UNL graduate students to give talks to undergraduates interested in math at local universities and colleges. The speaker and supporting graduate student hold a Q&A after the talk about graduate school.

#### Nebraska Conference for Undergraduate Women in Math

2018 - 2022

Each year I volunteer for NCUWM, which encourages undergraduate women to pursue math. In 2020 I was the invited graduate student representative from UNL to speak on a panel about choosing a graduate program.

#### University of Nebraska–Lincoln Math Day

2017 - 2022

Each year I volunteer for UNL Math Day, where over a thousand high school students from across Nebraska visit UNL's campus to participate in math competitions.

### SERVICE

#### Graduate Student Advisory Board

May 2020 - May 2022

I served on this board, which plans community events and acts as a liaison between the graduate students and faculty in the department.

#### Graduate Students Talking in Groups, Semigroups, and Topology (GST)<sup>2</sup>

Fall 2021

(GST)<sup>2</sup> is a graduate student seminar for students in geometric group theory and topology. I organized the seminar in Fall 2021.

#### Field of Dreams

Nov. 2021

I represented the UNL math graduate students at a virtual recruitment booth at the conference Field of Dreams. I talked to several interested undergraduate students about the program.

#### Equity in Teaching Orientation Session

Aug. 2021

I ran a session during the UNL math graduate student orientation with two other graduate students about equitable teaching practices.

#### Math Department Recognition Ceremony and Graduation Receptions

Apr. & Sept. 2021

I helped host and organize these events online.