Austin Ulrigg

Email: austinul@uw.edu
University of Washington
https://austinulrigg.github.io/

Education

2023–2026 **B.Sc. in Mathematics**, *University of Washington*, Seattle, *3.83 GPA*

2023–2026 **Minor in Philosophy**, *University of Washington*, Seattle

2020–2022 **Associates in Science**, *Centralia College*, Centralia, WA

2018–2022 **High School Diploma**, *Centralia High School*, Centralia, WA

Research and Publications

Spring 2024–Winter 2025 **A Practical Genus Algorithm**, *University of Washington*, Seattle

With Alexander Metzger, I co-authored a paper on an algorithm that determines the orientable genus of an arbitrary graph G with n vertices in $O(n(4^m/n)^{n/t})$ steps. The paper was submitted to *Discrete Mathematics* on 11/25/2024. `https://arxiv.org/abs/2411.07347`

Fall 2025 **Undergraduate Honors Thesis (Expository): Graph Genera and Minors**, *University of Washington*, Seattle

Expository thesis supervised by Dr. François Clément, surveying graph embeddings on surfaces, rotation systems, and genus algorithms (such as PAGE), and an overview of forbidden toroidal minors and related open problems. Read here.

Summer 2025–Present **Independent Research in Topological Graph Theory**, *University of Washington*, Seattle

Under the supervision of Dr. François Clément, I am working on an ongoing project on forbidden minors for the torus.

Fall 2024 **Washington Experimental Math Lab (WXML)**, *University of Washington*

Under the guidance of Professor Stefan Steinerberger, I collaborated with a team of graduate and undergraduate students to study the dynamical system in https://arxiv.org/abs/2409.08961.

Spring 2024 **Washington Experimental Math Lab (WXML)**, *University of Washington*

Under the guidance of Dr. Hadrian Quan, I worked with a group of undergraduates and a graduate student mentor studying wave propagation on graphs. We investigated graph path homotopy, and spectral analysis of the graph Laplacian and graph products.

Outreach and Service

Math Student Council, University of Washington *Council Member, 2024-Present*
Supported math majors via events, resources, and student representation. Organized study halls, events, and networking. Facilitated communication between students and faculty.

Teaching Assistant, University of Washington *MATH 209 (Linear Analysis), Sep 2024-Present*
Assisted with ODEs and BVPs for classical PDEs (heat, wave, Laplace); graded assignments and provided one-on-one/small-group help.

Mathematics Tutor, University of Washington *CLUE, Sep 2024-Present*
Tutored courses from intro through abstract algebra and complex analysis; emphasized problem-solving, conceptual understanding, and exam prep.

Mathematics Tutor, Mathnasium *Jul 2025-Sep 2025*
Tutored K–12 students in algebra, geometry, and precalculus; strengthened foundational skills and supported students' confidence in math.

STEM Tutor, Centralia College *May 2020-Jun 2022*
Tutored Calculus I–III, Intermediate Statistics, and Human Biology; supported center operations and collaborated with faculty.

Solution Notes: *Pearls in Graph Theory* *May-Jun 2024*
Contributed a 12-page set of solution notes for problems from Hartsfield–Ringel's *Pearls in Graph Theory*.

Volunteer Tutoring *Jan 2023–Present*
Volunteer tutor with over 100,000 posts in a global online community of 200,000+ members, fostering

mathematical discussion and providing math assistance.

Summer Credit Retrieval Assistant, Centralia High School *Summers 2017 & 2018*
Assisted high school students with recovering math and science credits.

Independent Mathematics Tutoring *2023-Present*
Private tutor for high school and undergraduate math, online and in person.

Honors and Awards

Husky 100 Nominee *2025*
Math Alliance Predoctoral Scholar Nominee *2023*
#1 Ranked Student, Centralia High School Class of 2022 *2022*
Centralia College Outstanding Student of the Year (Nominee) *2022*
Phi Theta Kappa Honor Society *2021-Present*
Dean's List *Fall 2023; Spring 2024; Winter 2025*
Scholarships Awarded ($12,000 total) *2022*

Professional Experience

Outlier AI; DataAnnotation *Aug 2023-Jul 2024; Aug 2025-Present*
Wrote/edited math prompts for LLM's and solutions; reviewed peers' work and evaluated reasoning; applied and created rubrics, noted topic/difficulty, and corrected notation/LaTeX.

Talks and Presentations

UW Undergraduate Research Symposium *Speaker, May 2025*
Presented *A Practical Genus Algorithm*, a new approach to genus computation using an $O\big(n(4^m/n)^{n/t}\big)$ time complexity algorithm. The talk emphasized the theoretical advancements in narrowing the genus range and how these results can impact broader mathematical and computational fields.

Husky Math Talk, University of Washington *Speaker, Feb 2025*
A Practical Genus Algorithm: outlined practicality in exploring rotation systems and refining genus bounds; discussed discovery of unknown graph genera.

Undergraduate Reading Groups in Topology and Algebra *Co-Organizer & Speaker, 2024–2025*
Co-organized and led reading groups in topology and algebra, preparing undergraduates for graduate-level math. Facilitated discussions, assigned problems, and guided students in advancing their understanding.

Advanced Linear Algebra Reading Group *Instructor & Organizer, Jul 2024*
Led a 25+ member group on Axler's *Linear Algebra Done Right*; covered quotient/dual spaces, multilinear algebra, tensors, and inner product spaces. Organized meetings, graded homework, and directed students to additional resources.

Euler Characteristic of a Torus and the Utilities Problem *Speaker, Jun 2024*
Talk for 30 advanced high-school students on surfaces of various genera, Euler's formula, and the utilities problem on a torus.

Complex Analysis Reading Group *Instructor & Organizer, Mar 2024*
Facilitated a reading group of 30+ undergraduates on Stein & Shakarchi's *Complex Analysis*, covering chapters on fundamentals of complex functions and integrals. Organized meetings, graded problem sets, and directed students to additional learning materials.

Advanced Calculus Reading Group *Instructor & Organizer, Jul 2023*
Led a 15-student group on Folland's *Advanced Calculus*; covered single and multivariable topics.