Curriculum Vitae
Hays W. Whitlatch

CONTACT INFORMATION	**Assistant Professor of Mathematics**
	Gonzaga University
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EDUCATION

Ph.D. Mathematics, May 2019
University of South Carolina, Columbia, SC
Thesis Title: Successful Pressing Sequences in Simple Pseudo-Graphs
Advisor: Dr. Joshua Cooper

M.S. Mathematics, May 2014
Middle Tennessee State University, Murfreesboro, TN
Thesis Title: Isoperimetric Constants in Graphs with Hyperbolic Properties
Advisor: Dr. Xiaoya Zha

B.S. in Mathematics, May 2008
University of Iowa, Iowa City, IA

TEACHING EXPERIENCE
† **Directed study**
ƒ **Florence campus**
* **Honors designated**

Gonzaga University

Math 121: Introductory Statistics	(F21*, F22*×2, Su22)
Math 157: Calculus I	(F19×2, F20×2, Sp21, Su21, F23*)
Math 231: Discrete Structures	(Sp20, F22×2, F23*×2)
Math 258: Calculus II	(Sp20, Su21)
Math 260: Ordinary Differential Equations	(Sp21, Sp23^{ƒ} × 2)
Math 321: Statistics for Experimentalists	(Su20, Sp23^{ƒ})
Math 339: Linear Algebra	(F21*×2, Sp22*×2)
Math 351: Combinatorics and Graph Theory	(F19)
Math 361: Topics: Mathematics of Game Shows	(Sp22*)
Math 457: Number Theory and Cryptography	(F20, F22*)
Math 490: Chemical Graph Theory	(F21†)
Math 490: Discrete Methods in Genetics	(Sp20†)
Math 490: Graph Theory Applications Research	(F21†)
Math 490: Monitoring Power Networks	(Sp21†)
Math 490: Linear Algebra and Sequences	(Sp22†)

MENTOR EXPERIENCE

Gonzaga University

Undergraduate Research Mentor Fall 2023 - present

Co-mentored (with Dr. Katharine Shultis) one undergraduate students in a research project on self-terminating integer arrays.

Undergraduate Research Mentor Fall 2023 - present

Co-mentored (with Dr. Katharine Shultis) three undergraduate students in a research

project on Solving Boardgames using Graph Theory. Project is ongoing.

Undergraduate Research Mentor Fall 2022

Co-mentored (with Dr. Katharine Shultis) five undergraduate students in a research project on Total Roman Domination in Kneser Graphs. Project is supported by McDonald Grant (Gonzaga University). Project resulted in student poster as well as student presentations at conferences. Project is currently being written for publication.

Undergraduate Research Mentor Summer 2022 - Fall 2022

Co-mentored (with Dr. Katharine Shultis) one undergraduate students in a research project on Graph Searching Application of Cat and Mouse Game. Project has resulted in student poster as well as student presentation at Fall family weekend.

Undergraduate Research Mentor Spring 2022

Co-mentored (with Dr. Rob Ray) eight undergraduate students in two research projects: Adding combinatorial interpretations to the OEIS, and Counting Cholesky Roots over Finite Fields. Projects are supported by McDonald Grant (Gonzaga University). Project conclude with the correct and update of several sequences on the Online Encyclopedia of Integer Sequences (https://oeis.org/).

Undergraduate Research Mentor Fall 2020 - Fall 2021

Co-mentored (with Dr. Katharine Shultis) three undergraduate students in a research project related to solving the Total Roman Domination in Kneser graphs. Project is supported by McDonald Grant (Gonzaga University).

Undergraduate Research Mentor Spring 2020 - Summer 2020

Mentored one undergraduate students in an investigation project on probabilistic models that can be used to assign haplotypes to DNA windows. Project resulted in student poster displayed in Bollier (student presentation was not possible due to COVID).

Undergraduate Research Mentor Fall 2019 - Summer 2020

Co-mentored (with Dr. Katharine Shultis) three undergraduate students in a research project concerning the probability of successfully monitoring an electric grid of size n by uniformly at random placing m monitors on the grid. Project is supported by McDonald Grant (Gonzaga University). Project resulted in peer-reviewed publication and several presentations by faculty and students.

PUBLICATIONS

Accepted/In Print While Employed at Gonzaga

6. J. Cooper, E. Hanna, H. Whitlatch. "Positive-Definite Matrices over Finite Fields." *Rocky Mountain Journal of Mathematics.* Accepted.https://projecteuclid.org/journals/rmjm/rocky-mountain-journal-of-mathematics/acceptedpapers.

5. S. Kniahnitskaya, M. Ortiz, O. Ramirez. K. Shultis, H. Whitlatch. "Counting Power Domination Sets in Complete m-ary Trees." *Theory and Applications of Graphs.* (2023), Vol. 10: Iss. 1, Article 4.

4. G. Dorpalen-Barry, C. Hettle, D. Livingston, J. Martin, G. Nasr, J. Vega H. Whitlatch. "A positivity phenomenon in Elser's Gaussian-cluster percolation model" *Journal of Combinatorial Theory - Series A.* **179** (2019), 105364.

3. J. Cooper, P. Gartland, H. Whitlatch. "A New Characterization of $\mathcal{V}$-posets." *Order.* (2019), 1–17.

Accepted/In Print Prior to Gonzaga Employment

2. J. Cooper, H. Whitlatch. "Uniquely Pressable Graphs: Characterization, Enumeration, and Recognition," *Advances in Applied Mathematics.* **103** (2019), 13–42.

1. Anderson, Bai, Barrera-Cruz, Czabarka, Da Lozzo, Hobson, Lin, Mohr, Smith, Szekely, Whitlatch. "Analogies between the Crossing Number and the Tangle Crossing Number," *The Electronic Journal of Combinatorics.* **25** (2018), 4.24.

OTHER RESEARCH COLLABORATIONS

Submitted

1. H. Whitlatch. "On the Number of Cholesky Roots of the Zero Matrix over F2." https://arxiv.org/abs/2109.06130

In Preparation

1. J. Cooper, E. Hanna, H. Whitlatch. "Uniform Sampling of Symmetric Matrices over Finite Fields by Size and Rank."

2. Alochukwu, Dossou-Olory, Osaye, Misanantenaina Ep Rakotonarivo, Ravichandran, Selkirk, Wang, and Whitlatch. "Protection in Trees"

Ongoing Projects

1. A. Clifton, G. Turner, H. Whitlatch. "Equitable Dissection of Graphs."

2. Asplund-Wain, Dojan, Ikard, Nored, Mallott, Shultis, Stainsby, Whitlatch. "Total Roman Domination in Kneser Graphs."

3. Alochukwu, Dossou-Olory, Osaye, Misanantenaina Ep Rakotonarivo, Ravichandran, Selkirk, Wang, and Whitlatch. "New Invariants for Centrality in Trees"

SCHOLARLY PRESENTATIONS

Invited Talks

Power Domination Sets in Complete m-ary Trees   January 2023
Joint Math Meetings
Boston, MA

Power Domination Sets in Complete m-ary Trees: November 2022
An Undergraduate Research Experience
Cascadia Combinatorial Feast
Seattle, WA

Power Domination Sets in Complete m-ary Trees: March 2022
U of SC Discrete Math and Combinatorics Seminar
Columbia, SC

A Positivity Phenomenon in Elser's Gaussian-Cluster   March 2020
Percolation Model

Coast Combinatorics Conference
University of Victoria, BC, Canada

How to Steal All the Hearts and Get Away With It　　　February 2020
Guest Lecture for Math 360
Gonzaga University, Spokane, WA

ADVISING

Academic Advising

Support advisees from mathematics and related majors in selection of courses, majors, concentrations, minors, and certificates. Monitor academic progress toward graduation and post-graduation employment. Serve as point of reference for student support services such as the Center for Cura Personalis.

Other Advising

Offer holistic support to empower students to reach their full potential at Gonzaga. Have written 59 letters of recommendation for 16 students for internships, jobs, graduate school applications, summer research experiences, shcolarships and more.

Gonzaga Society for Women In Mathematics, *Member*	2021 - present
Spokane Math Group/Math Colloquium, *Chair*	2021 - present
Nebraska Conf. Undergraduate Women in Mathematics, *GU Organizer*	2022
Nebraska Conf. Undergraduate Women in Mathematics, *Attendee*	2021
Sexuality and Gender Equity (SAGE) 1, Certification.	2020
Mathematics Graduate School Panel, *Organizer*	2019

INSTITUTIONAL
SERVICE AT
GONZAGA

Department of Mathematics

Gonzaga Society for Women in Mathematics, *Member*	2021 - present
Math Colloquium, *Organizer*	2021 - present
Major Assessment Committee, *Member*	2020 - present
Student Research Committee, *Chair*	2021 - present
Online Summer Course Development Committee, *Member*	2021 - 2022
Applied Mathematics Committee, *Member*	2019 - 2020
Dream Committee (Math), *Member*	2021 - 2022
Calculus Committee, *Member*	2020 - 2021
Courses for High-School Students, *Member*	2020 - 2021
Mathematics Association of America, *Department Liaison*	2019 - 2020
Mathematics Tenure-Track Hiring Committee, *Member*	2019

College and University

Faculty in Residence, *Dillon Hall*	2023 - present
CAS Curriculum Committee, *Member*	2021 - present
STEM - IDEAS, *Member*	2021 - present
Equity in Registration Task Force, *Section Coordinator*	2021 - 2023
University Benefits committee, *Member*	2019 - 2023
Honors Advisory Board, *Member*	2021 - 2022

GRANTS, AWARDS
AND OTHER HONORS

Grants Received

McDonald Work Award,	2023-2024

Gonzaga University - $5,807$ award

McDonald Work Award, 2022-2023
Gonzaga University - $8,165$ award

McDonald Work Award, 2021-2022
Gonzaga University - $4,368$ award

McDonald Work Award, 2020-2021
Gonzaga University - $4,212$ award

McDonald Work Award, 2019-2020
Gonzaga University - $1,913$ award

Funded Research Workshops

NSF travel grant for three-day research visit, Jan 2023
University of Massachusetts (Dorchester, MA)

AMS Math Research Community, July 2022
Trees in Many Contexts (Java Center, NY)

CONFERENCE PARTICIPATION	*Joint Math Meetings - Boston, MA*	2023
	Cascadia Combinatorial Feast	2022
	Queer and Trans Mathematicians	2021
	Coast Combinatorics Conference	2021
	Joint Math Meetings - Virtual	2021
	MathFest - Virtual	2020
	Mastery Grading Conference	2020
	Coast Combinatorics Conference	2020
	Joint Math Meetings - Denver, CO	2020
	Joint Math Meetings - Baltimore, MD	2019
	Southeast Center for Math and Biology Annual Symposium	2019

ACADEMIC SERVICE	**Journal Referee,** *Theory and Applications of Graphs*	2018 - present
	Journal Referee, *Missouri Journal of Mathematical Sciences*	2022 - present
	Reviewer, *Cambridge University Press*	2018 - 2022

SKILLS AND MEMBERSHIPS	**Foreign Languages:** Italian (basic proficiency), Spanish (native proficiency).
	Programming Languages: Maple, SageMath, python.
	Erdös Number = 2.