Leanne Merrill

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Education

Ph.D. Mathematics, The University of Oregon, 2017. Dissertation: *Periodic Margolis Self-Maps at* $p = 2$..

M.S. Mathematics, The University of Oregon, 2014.

M.A. Mathematics, The State University of New York at Potsdam, 2011.

B.A. Mathematics, The State University of New York at Potsdam, 2011.

B.A. Music, The State University of New York at Potsdam, 2011.

Employment

Assistant Professor, September 2017-present. **First Year Seminar Coordinator**, July 2021-present. Western Oregon University.

Graduate Teaching Fellow, September 2011-July 2017. University of Oregon.

REU Researcher, Summer 2010, Oregon State University.

REU Researcher, Summer 2009, State University of New York at Potsdam.

Awards

Monmouth-Independence Chamber of Commerce Educator of the Year, 2021. Community award given to an outstanding educator in the Monmouth-Independence area.

OpenOregon OER Champion Award for OER Creation and Advocacy, 2021. Statewide award given to two faculty for creation of and advocacy for OER.

Graduate Teaching Excellence Award, 2016. University of Oregon Graduate School award recognizing a single Graduate Teaching Fellow with at least four years of excellent teaching outcomes.

Anderson Distinguished Teaching Award, 2016. University of Oregon Mathematics Department award recognizing two effective graduate student teachers.

Johnson Fellowship, 2016. University of Oregon travel grant recognizing outstanding academic performance.

Dan Kimble First Year Teaching Award, 2012. University of Oregon Graduate School award recognizing high-quality teaching performances by two first-year Graduate Teaching Fellows.

Clarence F. Stephens Award in Mathematics, 2010. State University of New York at Potsdam award for most promising mathematics undergraduate.

Grants

OpenOregon Textbook Review Grant, 2021. Stipend to review open textbook and redesign course using an open educational resource. Amount: $250.

OpenOregon Textbook Equity and Open Education Cohort Grant, 2020. Stipend to participate in statewide cohort class and engage in curricular revision through an equity lens. Amount: $500.

Dolciani Mathematics Enrichment Grant, 2020. Create and study Polk County Math Circle, an equity-based high school mathematics enrichment program. Amount: $5000. *(Note: due to Covid-19, receipt of this grant was delayed until 2021.)*

WOU Textbook Affordability Author Grant, 2020. Stipend to write Math 110 Open Educational Resource textbook and create auxiliary resources. Amount: $4000.

OpenOregon Textbook Review/Course Redesign Grant, 2019. Stipend to review open textbook and redesign course using an open educational resource. Amount: $750.

Faculty Development Grant, Category I, 2019. Conference Travel Money for MAA Sectional Meeting in Portland, OR. Amount: $417.94.

WOU Competitive Grants, 2018, 2019, 2020, 2021. Funding for Women in STEM Speaker Series. Co-submitted with Dr. Breeann Flesch and Dr. Kristin Latham-Scott. Amount: $500 (in 2018) and $1000 (in 2019, 2020, and 2021).

Faculty Development Grant, Category I, 2017. Conference Travel Money for AMS Sectional Meeting in Portland, OR. Amount: $446.04.

Publications Authored

Multigraphs from Crossword Puzzle Grid Designs, journal article, with Dr. Ben Coté. Submitted to *Recreational Mathematics Magazine*, September 2021.

Helen Abbot Merrill: Unexpected Connections, 2021, *MAA FOCUS*, June/July 2021, p. 12-14.

The University of Oregon AWM Chapter: Creation and Evolution, book chapter. Accepted to appear in *Fifty Years of Women in Mathematics: Reminiscences, History, and Visions for the Future of AWM*, Springer, December 2021.

Applied College Mathematics at Western Oregon University, OER textbook and auxiliary materials. First edition Spring 2020, second edition (including fully accessible ebook) to appear Winter 2022.

A Tale of Two Puzzles: Towers of Hanoi and Spin-Out, 2013, *Journal of Information Processing*, v. 21, pp. 378-392.

Intrinsically linked signed graphs in projective space, 2012, *Discrete Mathematics*, v. 312, pp. 2009-2022.

Publications Advised

Salsbury, Josh. **A Mathematical Approach to Inventory Management for Client-Choice Food Pantries**, accepted with minor revisions to *PURE Insights*, October 2021.

Honors Theses Supervised

A Mathematical Approach to Inventory Management at Client-Choice Food Pantries, Josh Salsbury. Supervised Fall 2019-Spring 2021.

Masters Theses Reviewed

Designing Explicit Opportunities to Develop Academic Language, Justin Spinner, MAT Thesis. Reviewed Spring 2019.

Talks

Multigraphs and Crossword Puzzle Grid Designs, MAA MathFest, August 2021.

The Magical Number 9. The State University of New York at Potsdam REU Program (on Zoom), July 2021.

The Magical Number 9. California State University Monterey Bay Colloquium (on Zoom), May 2021.

The Magical Number 9. Willamette University Mathematics Colloquium, February 2020.

It's Turtles All The Way Down: Self-Similarity in Mathematics, Music, and Life. Academic Excellence Showcase, Western Oregon University, May 2019.

What is category theory? An elementary (school) approach. Oregon State University Mathematics Colloquium, April 2019.

Transparent Teaching, Backward Design, and Mastery-Based Grading in a First Linear Algebra Course. MAA Sectional Meeting, April 2019.

Algebraic v_n self-maps at the prime 2. Oregon State University Geometry/Topology Seminar, March 2019.

Searching for v_n self-maps at the prime 2: an algebraic approach. Joint Mathematics Meetings, Baltimore, January 2019.

Periodic Margolis Self-Maps at $p = 2$. AMS Sectional Meeting, Portland, April 2018.

Algebraic Analogs of v_n maps at the prime 2. University of Chicago Topology Seminar, November 2016 and University of Rochester Topology Seminar, December 2016.

Introduction to Chromatic Homotopy Theory. West Coast Algebraic Topology Summer School, University of Oregon, August 2016.

The Steenrod Algebra. West Coast Algebraic Topology Summer School, University of Oregon, August 2015.

Relations Between Homology and Homotopy Groups, II (Eilenberg-MacLane). Summer School in Algebraic Topology, July 2014.

Introduction to Higher Homotopy Groups. Mathematics Undergraduate Colloquium Series, the State University of New York at Potsdam, April 2014.

Topological Methods in Data Analysis. Mathematics Undergraduate Colloquium Series, the State University of New York at Potsdam, April 2014.

The Axiom of Choice (directly) implies the Well-Ordering Principle (after Zermelo). Master's Oral Presentation, the State University of New York at Potsdam, May 2011.

Signed Minor-Minimal Intrinsically Linked Graphs in Projective Space. MathFest, August 2009 and the UnKnot Conference, July 2009.

Conferences Attended

MAA MathFest, Remote, August 2021.

MAA Pacific Northwest Sectional Meeting, Remote, June 2021. *(Note: this was originally scheduled for 2020 but was postponed due to Covid-19.*)

OpenOregon Virtual Statewide OER Symposium, Remote, May 2021.

Transforming Linear Algebra, Remote, May 2021.

Textbook Affordability Workshop, Remote, May 2020.

MathFest Meeting, Cincinnati, August 2019.

MAA Pacific Northwest Sectional Meeting, Portland, April 2019.

Joint Mathematics Meetings, Baltimore, January 2019.

MathFest Meeting, Denver, August 2018.

AMS Sectional Meeting, Portland, April 2018.

Oregon Academy of Science Meeting, Newberg, March 2018.

Homotopy Theory in the Ecliptic, Portland, August 2017.

Joint Mathematics Meetings, Atlanta, January 2017.

Alpine Algebraic and Applied Topology Conference, Saas-Almagell, Switzerland. August 2016.

West Coast Algebraic Topology Summer School, University of Oregon, August 2016.

Talbot Workshop on Equivariant Stable Homotopy Theory and the Kervaire Invariant, hosted by MIT, Utah, April 2016.

West Coast Algebraic Topology Summer School, University of Oregon, August 2015.

Talbot Workshop on the Little Disks Operad, hosted by MIT, Mt. Hood, Oregon, April 2015.

Summer School in Algebraic Topology, Centro de Investigación en Matemáticas, Guanajuato, Mexico, July 2014.

Graduate Student Topology and Geometry Conference, University of Texas at Austin, April 2014.

Introductory Workshop: Algebraic Topology, Mathematical Sciences Research Institute, Berkeley, January 2014.

Women in Algebraic Topology Conference, Mathematical Sciences Research Institute, Berkeley, January 2014.

Western Algebraic Geometry Symposium, University of California at San Diego, November 2013.

Joint Mathematics Meetings, New Orleans, January 2011.

Joint Mathematics Meetings, San Francisco, January 2010.

MathFest, Portland, August 2009.

UnKnot Conference, Ohio, July 2009.

Seminar Talks

Introduction to Chromatic Homotopy Theory. Homotopy Theory Seminar, University of Oregon, September 2016.

Classification of finite-dimensional division algebras over $\mathbb{R}$. Summer Seminar, University of Oregon, July 2016.

All Concepts are Kan Extensions. Homotopy Theory Seminar, University of Oregon, May 2016.

Periodicity in Stable Homotopy Theory. Homotopy Theory Seminar, University of Oregon, January 2016.

The Arf-Kervaire Invariant Problem. Homotopy Theory Seminar, University of Oregon, April 2015.

Introduction to the dual Steenrod algebra. Homotopy Theory Seminar, University of Oregon, February 2015.

Spectra with homotopically significant self-maps. Homotopy Theory Seminar, University of Oregon, January 2015.

What is the Steenrod Algebra and why should I care? Homotopy Theory Seminar, University of Oregon, October 2014.

There are Infinitely Many Universes on my Beach Ball! Graduate Notions, University of Oregon, October 2014.

Complex Bott Periodicity. Homotopy Theory Seminar, University of Oregon, May 2014.

How to Give an Undergraduate Talk. Undergraduate Teaching Seminar, University of Oregon, April 2014.

Mod 2 Cohomology of Eilenberg-MacLane Spaces. Homotopy Theory Seminar, University of Oregon, February 2014.

Graph Theory and the Towers of Hanoi. Graduate Notions Seminar, University of Oregon, January 2014.

Applied Topololgy. Homotopy Theory Seminar, University of Oregon, December 2013.

Incorporating Current Events into Mathematics Courses. Undergraduate Teaching Seminar, University of Oregon, November 2013.

Polya's Theorem, Part II. Functional Analysis Seminar, University of Oregon, October 2013.

The Optional Stopping Time Theorem. Graduate Notions Seminar, University of Oregon, April 2013.

Women in Undergraduate Mathematics. Undergraduate Teaching Seminar, University of Oregon, February 2013.

Ostrowski's Theorem. Graduate Notions Seminar, University of Oregon, January 2013.

Teaching

At WOU (all courses in-person unless otherwise specified):

FYS 207: Mathematics, Music, and the Mind. A first-year seminar emphasizing interdisciplinary connections between music, mathematics, and psychology. Focus is on developing the foundational skills necessary to succeed in college. Taught Fall 2019, Winter 2020, Winter 2021 (online synchronous), Fall 2021.

HNR 276: Puzzles and Patterns. General Honors Mathematics course, completely designed and developed from scratch for new WOU Honors Program in 2021. Modules included Numbers, Shapes, Connections, and Infinity. Taught Winter 2021 (online synchronous).

Destination Western Mathematics Experience. A two-week summer bridge program for incoming freshman of diverse backgrounds and preparation levels. Project-based curriculum included review of elementary algebra, geometry, trigonometry, and statistics. Taught Fall 2021.

Math 480/580: Special Topics in Topology. Introduction to topological concepts, including topological and metric spaces, notions of homeomorphism, compactness, connectedness, surfaces, and beginnings of algebraic topology. Taught Summer 2020 (online asynchronous).

Math 441: Linear Algebra II. A second course in linear algebra, emphasizing theoretical aspects of vector spaces, bases, eigenvalues, linear functionals, and spectral theorems. Taught Winter 2019.

Math 412: Math Education Capstone II. The second of a two-part capstone experience for mathematics secondary education majors. Involves completion of project and practice teaching in a school setting. Taught Spring 2019, Spring 2021 (online synchronous).

Math 411: Math Education Capstone I. The first of a two-part capstone experience for mathematics secondary education majors. Involves literature review, generation of project, and first steps in research and design. Taught Winter 2019, Winter 2021 (online synchronous), Spring 2021 (online synchronous).

Math 404: Senior Project II. The culmination of a three-term capstone course for mathematics majors. Supervise major research paper and public speaking for students. Involves one-on-one weekly meetings with all enrolled students. Taught Spring 2018.

Math 403: Senior Project I. The continuation of a three-term capstone course for mathematics majors. Supervise major research paper and public speaking for students. Involves one-on-one weekly meetings with all enrolled students. Taught Winter 2018.

Math 402: Independent Study. Topics vary based on term and student. Taught Winter 2019, Spring 2019 and Spring 2021 (online synchronous). (2019 Topics: Connections between Chemistry, Group Theory, and Linear Algebra; 2021 topic: Advanced Topics in Linear Algebra.)

Math 401: Introduction to Senior Project. The beginning of a three-term capstone course for mathematics majors. A literature review course with the goal of identifying a topic for a senior project. Involves one-on-one weekly meetings with all enrolled students. Taught Fall 2017.

Math 345: Ring Theory. Introduction to aspects of ring theory, include rings, ideals, homomorphisms, and divisibility. Taught Spring 2019, Spring 2020 (online asynchronous), Spring 2021 (online synchronous).

Math 344: Group Theory. Introduction to aspects of group theory, including groups, subgroups, permutation and cyclic groups, Lagrange's theorem, and isomorphism theorems. Taught Winter 2020, Winter 2021 (online synchronous).

Math 341: Linear Algebra I. A first linear algebra course covering systems of equations, matrices, vector spaces, and other selected topics. Taught Fall 2018.

Math 280: Introduction to Proof. The gateway course for mathematics majors, designed to teach them the basics of mathematical language and techniques for upper-level courses. Taught Spring 2018, Fall 2018, Spring 2019, Fall 2019, Fall 2020 (online synchronous), Fall 2021.

Math 254: Calculus IV. A multivariable calculus course on basic vector calculus, and differentiation and integration of multivariable functions. Taught Spring 2018.

Math 252: Calculus II. Integral calculus with modeling and continued work on higher-level mathematical concepts. Taught Winter 2018, Fall 2019, Fall 2020 (online synchronous).

Math 251: Calculus I. Differential calculus with modeling and introduction to higher-level mathematical concepts. Taught Fall 2017, Fall 2018, Fall 2019.

Math 243: Introduction to Probability and Statistics I. Introductory statistics and probability course for non-majors. Taught Summer 2021 (online asynchronous).

Math 199H/399H: Mathematics of Voting and Elections. An introduction to the mathematical theory of voting with applied aspects. Honors Colloquium Course. Taught Spring 2020 (online asynchronous).

Math 111: College Algebra. An introduction to polynomial, exponential, and logarithmic functions at the pre-calculus level. Taught Summer 2018, Summer 2019 (hybrid).

Math 110: Applied College Mathematics. Algebra and statistics with applications in science, business, and life skills. Developed all original course materials. Taught Fall 2017, Winter 2018, Winter 2019, Spring 2019, Winter 2020, Spring 2020 (online asynchronous), Summer 2020 (online asynchronous), Fall 2020 (online synchronous), Summer 2021 (online asynchronous).

At the University of Oregon (all courses listed below taught as instructor of record, in-person):

Mathematics "Boot Camp." Two-week mini-course reviewing undergraduate and beginning graduate mathematics for incoming mathematics graduate students. Taught Summer 2015.

Math 341: Linear Algebra 1. Introductory linear algebra course covering linear systems, matrices, vector spaces, bases, and the Rank-Nullity Theorem. Taught Summer 2016, Summer 2017.

Math 252: Calculus II. Integral calculus and differential equations, with an emphasis on mathematical modeling. Taught Winter 2016.

Math 251: Calculus I. An introduction to differential calculus with an emphasis on mathematical modeling. Taught Spring 2014, Winter 2015.

Math 213: Math for Elementary Education III. Part of a sequence on mathematical pedagogy for K-8 preservice teachers. Focused on geometry and aligned with the Common Core State Standards in Mathematics. Taught Summer 2014.

Math 212: Math for Elementary Education II. Part of a sequence on mathematical pedagogy for K-8 preservice teachers. Focused on number systems, fractions, and decimals, and aligned with the Common Core State Standards in Mathematics. Taught Summer 2015.

Math 112: Elementary Functions. A pre-calculus course covering trigonometric functions, vectors, and function operations. Taught Winter 2014, Fall 2014, Fall 2015.

Math 111: College Algebra. An introduction to polynomial, exponential, and logarithmic functions at the pre-calculus level. Taught Fall 2011, Winter 2012, Spring 2012, Fall 2012, Fall 2013.

Math 106: University Math II. A survey course for non-science majors, covering financial mathematics, number theory, and geometry. Taught Summer 2012, Summer 2013.

University and Professional Service

Professional Level:

Panel Co-organizer, MAA Section NExT Program, Spring 2021. *(Note: this was originally scheduled for 2020 but was postponed due to Covid-19.*)

Panelist, MAA Section NExT Panel on Mastery-Based Grading, Spring 2021. *(Note: this was originally scheduled for 2020 but was postponed due to Covid-19.*)

Panel Co-organizer, MAA Section NExT Program, Spring 2019.

Program Coordinator, Project NExT JMM 2019 Sessions. Fall 2018-Spring 2019.

At Western Oregon University:

Math Center/Math Paper Grader Director, June 2021-present. This is compensated with a 4-credit course reassignment, taken in Spring 2022.

WOU Food Pantry Supervisor, November 2020-present. This is a 0.2 stipend-funded position in Student Affairs.

Destination Western Curriculum Designer, June 2021-September 2021. Designed and implemented a brand-new bridge program for incoming freshman. Compensated via stipend through Student Affairs.

Commencement Marshal, June 2021.

Lightning Presentation: Math Grants, Introduction to Grant Writing Workshop at WOU, December 2020.

WOUFT Conduct Committee, member, Spring 2021-present.

WOUFT Salary Committee, member, Spring 2021-present.

WOUFT Hardship Fund Committee, member, Winter 2021-present.

Course Coordinator, Math 101 and Math 110, Fall 2020-Spring 2021.

Mathematics Department Program Review Coordinator, Spring 2020-present. This is compensated with a 4-credit course reassignment, taken in Spring 2021. Work is ongoing.

WOU Food Pantry, volunteer. Winter 2020-present.

Advisor, Pi Mu Epsilon, WOU Chapter. Fall 2019-present.

General Education PLC, member. Spring 2019-present. **Chair** in 2020-2021, which is compensated with a 4-credit course reassignment, taken in Spring 2021.

WOU Textbook Affordability Committee, member, Spring 2019-present.

Math/CS Assessment Committee, Math Department Member, Fall 2018-present.

Advisor, WOU Math Club. Spring 2018-present. Organized several student and faculty talks, including professional development for students.

Co-organizer, FEM in STEM Program, Spring 2018-present. **Supervisor** of WOUCiP FEM in STEM Intern Winter 2021-present and **manager** of Peer Mentoring program Spring 2021-present.

Outstanding Graduating Students Awards Committee Spring 2018-present.

Abby's House Advisory Council, member. Spring 2018-present.

Presenter, Math Program Spotlight, January 2021.

Catalyst Program Mentor, Winter 2021.

Math 101 Working Group, member. Winter and Spring 2020.

Diversity and Global Learning PLC, member. Spring 2018-Spring 2019.

Oregon Interinstitutional Faculty Senate, one-year proxy member. Spring 2018-Spring 2019.

WOU Faculty Senate, Natural Science and Mathematics Representative. Spring 2018-Spring 2020.

WOU Faculty Senate Executive Committee, member, Spring 2018-Spring 2020.

Session Coordinator, Sonia Kovalevsky Day, WOU Math Department. Winter 2018 and Winter 2019.

Math 105 Working Group, member. Fall 2018 and Spring 2019.

Mathematics Department Presenter, Your World at WOU Admissions event, Fall 2018.

Session Co-Chair, Mathematics AES Session, Spring 2018.

Panelist, Failing Forward Panel for Mental Health Awareness. Spring 2018.

Scholarship Reviewer, Office of Financial Aid. Winter 2018.

Online Homework Working Group, member. Fall 2017.

At the University of Oregon:

Mathematics Content Specialist, Common Core Implementation Program, Lane County, 2012.

Mathematics Instructor, Oregon Young Scholars Program. Summer 2014, Summer 2015, Summer 2016.

Student Representative, Graduate Affairs Committee, University of Oregon. Spring 2011-Spring 2014.

President and co-founder, Association for Women in Mathematics student chapter, University of Oregon. Spring 2013-Spring 2017. Committee Chair for Undergraduate Mentoring and K-12 outreach.

Board of Directors Member, University of Oregon Duck Store, Winter 2015-Spring 2017.

Trainings

Catalyst: Flipped, July 2021.

SafeZone, Primary Training, February 2019 and April 2021.

Write to Publish Workshop, December 2019 and December 2020.

QPR Suicide Prevention, September 2019.

Catalyst, July 2020.

Memberships

Mathematical Association of America, member since 2017.