

RUTH VANDERPOOL

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EDUCATION

University of Oregon, Eugene, OR.

- Ph.D. in Mathematics, June 2009.
Thesis topic: Non-existence of a stable homotopy category for p -complete abelian groups.
Advisor: Hal Sadofsky.
- M.S. in Mathematics, June 2005.

Pacific Lutheran University, Tacoma, WA.

- B.S. in Mathematics, May 2002.
- B.A. in Computer Science, May 2002.
Cum Laude.

ACADEMIC POSITIONS

Lecturer, University of Washington, Tacoma.

- September 2009-Present.

Instructor, University of Oregon.

- June 2009 - September 2009.

Graduate Teaching Fellow, University of Oregon.

- September 2003 - June 2009.

TEACHING INTERESTS

- Standard undergraduate curriculum: Precalculus, Calculus, Discrete, Geometry, Topology, Linear & Abstract Algebra.
- Special topics: Math Education, Interdisciplinary Arts & Math.

PEDAGOGICAL INTERESTS & HIGHLIGHTS

- Interdisciplinary teaching approaches in math classes:
 - Emphasize applications from the sciences, business, computer engineering, and computer science in all math courses.
 - Develop writing and research projects for upper division courses.
- Technology use in math education:
 - Incorporate appropriate online math applications into most classes.
 - Develop programming labs for Discrete 1.
- Quantitative literacy across the curriculum:
 - Develop liberal arts math course for freshman orientation program.
 - Construct math activity for freshman orientation program.

PAPERS

Vanderpool R. (2012). Categorical properties of p -complete abelian groups. *Communications in Algebra* 40, 2949-2961.

RELATED
ACADEMIC
EXPERIENCE
& TRAINING

Technology Fellows Institute, University of Washington, Tacoma 2012. Three month workshop developing an online mathematics course using research-based best practices. Program directed by Dr. Colleen Carmean.

Sage: Open-Source MathSoftware with Undergraduates, Mathematical Association of America, online 2012. One month program directed by Dr. Karl-Dieter Crisman & Dr. Dan Drake. Developed programs to support in-class lectures and student driven labs.

Writing Fellows Institute, University of Washington, Tacoma 2010. Reevaluated & restructured writing assignments throughout the year in a guided curriculum development program directed by Dr. Anne Beaufort.

Undergraduate Research, Indiana University Summer 2001. Investigated braid groups and knots under the direction of Dr. Zhenghan Wang with funding from the National Science Foundation.

Summer Mathematics Program, Carlton College Summer 2000. Participated in month long intensive courses on Fuzzy Logic and Homotopy Theory in an all-women environment. Funded by the National Science Foundation.

ACADEMIC
SOFTWARE
EXPERIENCE

Mathematical Software.

- Sage. Open source mathematics software used as an aide in lectures and during inquiry-based learning activities: Fall 2012-present.
- Geometer's Sketchpad. Used for the Mathematics for Elementary School Teachers class in a weekly lab: Summer 2004.
- Microsoft Excel. Assisted in editing and implementing labs on regression, limits, and derivatives: Winter 2007.

Educational Platforms.

- Canvas. Housed course calendar, content, and communication software, such as discussion boards, Adobe Connect, and Tegrity, for online office hours: Fall 2012-present.
- Catalyst. Used to post grades, run a discussion board, and gather feedback from students: Fall 2009-Spring 2012.
- Blackboard. Used to post grades and gather feedback from students: Fall 2003-Summer 2009.

Online Homework Systems.

- WebAssign. Used to supplement written homework, to post grades, and to run a discussion board: Spring 2008, Fall 2008, Fall 2010-present.
- WebWork. Used to supplement written homework: Fall 2009, Winter 2010, Spring 2010, Summer 2010.

ACADEMIC &
COMMUNITY
SERVICE

**University of Washington Tacoma,
Interdisciplinary Arts & Sciences.**

- Precalculus course coordinator: Fall 2009-present.
- Mentor in the Student Success Mentoring Program: Fall 2012-present.
- Researching performance of precalculus online: Spring 2012-present.
- Member of Interdisciplinarity Task Force: Spring 2012-present.
- Provided annual reviews for select lecturers: Winter 2010-present.
- Designed & contributed a course to the freshmen's orientation program: 2010, Winter 2012, Spring 2012, Fall 2012.
- Direct an independent reading course: Fall 2011-Winter 2012.

American Mathematical Monthly Journal

- Reviewed article submissions: 2010-2012.

Creative Educational Experiences (CEE), Tacoma.

- Developed and presented courses for the non-profit CEE that organizes academic outreach to local high school students: Winter 2010, Spring 2012.

University of Oregon, Mathematics Department.

- Participant in first year orientation: Summer 2006, 2008.
- Graduate student interviewer for hiring committee: Spring 2008.
- College Algebra coordinator: Spring 2005, Fall 2006, Fall 2007.
- Elementary Functions course coordinator: Fall 2004.

Graduate Teaching Fellows Federation.

- Union Steward: Spring 2005-Spring 2006.

SELECTED
PRESENTATIONS

- “Quantum Bomb Detection”, Joint invitation to Pacific Lutheran University Math Department Seminar, March 14, 2012.
- “Paper Folding $\sqrt[3]{2}$ ”, SMPosium, Carleton College, July 1, 2011.
- “The Answer to Life, the Universe, and Everything (in Math)”, Joint IAS departmental talk at UWT with Dr. Card, June 3, 2011.
- “A Concrete Example of Incompleteness”, Invited speaker to Pacific Lutheran University Math Department Seminar, March 16, 2011.
- “Visualizing the p -adics”, SMPosium, Carleton College, July 3, 2009.
- Various topics in Topology and Mathematics Education, University of Oregon Math Seminars, 3-4 talks per year, Fall 2003-Summer 2009.
- “Bending and Stretching Spaces”, California Lutheran University, March 17, 2009.
- “Homology functors of chain complexes of p -complete abelian groups”, Joint Mathematical Meeting, Washington D.C. January 8, 2009.
- “The non-existence of a stable homotopy category for p -complete abelian groups.” University of Oregon Topology Seminar, October 21, 2008.
- “Deceptively Good Teacher Meets Deceptively Bad Teacher.” Invited speaker to University of Oregon's Teaching Seminar for first year Math Graduate Teaching Fellows, October 2004.

TEACHING
EXPERIENCE

The following are courses for which I was the sole instructor at the University of Oregon or the University of Washington, Tacoma. In particular, I was responsible for designing an outline of the course, lecturing, assigning homework, writing and grading exams, holding office hours, supervising a paper-grader, and assigning course grades.

Abstract Algebra. Introductory group theory course with a brief introduction to rings and fields.

Discrete Structures. Introductory discrete algebra for computer professionals.

Linear Algebra. Introductory proof-based course on vector and matrix algebra.

Calculus 1, 2, & 3.

- Differential calculus and applications for math and science majors.
- Integral calculus and applications for math and science majors.
- Sequences, series, and multivariable calculus for science majors.

Calculus for Life Sciences 2. Integral calculus with an emphasis on applications to mathematical models used in the life sciences.

Calculus and Its Practical Applications. Differential calculus with an emphasis on applications to mathematical models used in business & economics.

Introduction to Statistics. Survey of discrete probability, data analysis, sampling distributions, confidence intervals, and hypothesis testing.

Mathematics for Elementary School Teachers 1, 2, & 3.

- Logical systems and reasoning for future K-8 teachers.
- Number systems structure designed for future K-8 teachers.
- Topics in geometry designed for future K-8 teachers.

Elementary Functions. Survey of exponential, logarithmic, and trigonometric functions.

College Algebra. Primarily focused on function formalism and notation.

Origami Math. Freshmen college orientation course focused on geometry, origami, & scientific thinking.