

## Michelle Manes

---

CONTACT INFORMATION	Department of Mathematics University of Hawai'i at Mānoa 2565 McCarthy Mall Honolulu, HI 96822	<i>Office:</i> 808-956-4679 <i>Fax:</i> 808-956-9139 mmanes@math.hawaii.edu <a href="http://www.math.hawaii.edu/~mmanes/">http://www.math.hawaii.edu/~mmanes/</a>
RESEARCH INTERESTS	<p>My mathematical research interests lie at the intersection of number theory, algebraic geometry, and dynamical systems. I use algebraic techniques and ideas from algebraic and diophantine geometry to investigate problems in arithmetic dynamics. More recently, my research has broadened into other areas of number theory, especially rational points on curves and surfaces.</p> <p>In mathematics education, I have conducted research into student learning in linear algebra as well as theoretical research on the role of abstraction in mathematics. My current research is focused on effective content-based professional development for mathematics teachers at all levels.</p>	
EDUCATION	<p><b>Brown University</b>, Providence, RI          Ph.D., Mathematics <span style="float: right;">May 2007</span>          Thesis title: Arithmetic dynamics of rational maps          Adviser: Professor Joseph H. Silverman</p> <p>Sc.M., Mathematics <span style="float: right;">May 2004</span></p> <p><b>Boston University</b>, Boston, MA          Ed.M., Deaf Education <span style="float: right;">January, 1993</span>          Concentration in Mathematics Education</p> <p><b>University of California at Berkeley</b>, Berkeley, CA          A.B., Mathematics <span style="float: right;">May 1991</span></p>	
ACADEMIC EMPLOYMENT	<p><b>University of Hawai'i</b>, Honolulu, HI  <i>Associate Professor</i> <span style="float: right;">August 2013 – present</span>  <i>Assistant Professor</i> <span style="float: right;">August 2008 – July 2013</span></p> <p><b>ICERM</b>, Providence, RI  <i>Research Fellow</i> <span style="float: right;">Spring 2012</span></p> <p><b>University of Southern California</b>, Los Angeles, CA  <i>Assistant Professor (Non-tenure track)</i> <span style="float: right;">August 2007 - May 2008</span></p> <p><b>Brown University</b>, Providence, RI  <i>Graduate Teaching Fellow</i> <span style="float: right;">September 2003 - May 2007</span>  <i>Teaching Assistant and Grader</i> <span style="float: right;">September 2003 - May 2007</span>  <i>Tutor</i> <span style="float: right;">Fall 2002 - Summer 2005</span></p>	

OTHER  
EMPLOYMENT      **City On A Hill Charter High School**, Boston, MA  
*Mathematics Teacher*      AY 2001–2002

**Education Development Center, Inc.**, Newton, MA  
*Project Director*      1996 to 2001  
*Research Assistant and Research Associate*      1993 to 1996

**PROMYS** (a program of Boston University), Boston, MA  
*Teacher Counselor*      Summers 2001 – 2004, 2007

**LearningMath** (a program of WGBH), Boston, MA  
*Developer*      2001 – 2003

**Eureka!** (a program of Girls Inc.), Lynn, MA  
*Lead Teacher*      Summers 1993–1995

**The Learning Center for Deaf Children**, Framingham, MA  
*Teacher*      1993 – 1995

GRANTS      **UHM Outreach College OER grant** “Mathematics for Elementary Teachers” (personnel support to create OER textbook for use in Mathematics for Elementary Teachers courses). Principal Investigator. Total award \$5,000. Dates 6/1/2017 through 12/31/2017.

**Number Theory Foundation** “Women in Numbers 4” (travel support for graduate students and young faculty). Principal Investigator. Total award \$5,000. Dates 8/13/2017 through 8/18/2017.

**Clay Mathematics Institute** “Women in Numbers 4” (travel support for project leaders and organizers). Total award \$8,000. Dates 8/13/2017 through 8/18/2017.

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i: Year 6.” Co-PI. Total award \$50,382. Dates 09/1/2016 through 08/31/2017.

**Simons Collaboration Grant for Mathematicians.** PI. Total award \$35,000. Dates 09/1/2015 through 08/31/2020.

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i: Year 5.” Co-PI. Total award \$61,390. Dates 09/1/2015 through 08/31/2016.

**Number Theory Foundation** “Arithmetic 2015” (travel support for graduate students and young faculty). Principal Investigator. Total award \$4,000. Dates 8/11/2015 through 8/15/2015.

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i: Year 4.” Co-PI. Total award \$63,471. Dates 09/1/2014 through 08/31/2015.

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i: Year 3.” Co-PI. Total award \$86,420. Dates 09/1/2013 through 08/31/2014.

---

Tenure Awarded 2013

---

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i: Year 2.” Principal Investigator. Total award \$62,546. Dates 09/1/2012 through 08/31/2013.

**National Science Foundation (NSF) Standard Research Grant** “Developing a Theory of Dynamical Complex Multiplication.” Principal Investigator, award number NSF DMS-1102858. Total award \$99,814. Dates 08/15/2011 through 07/31/2014.

**Improving Teacher Quality State Grants: Title IIA** “Math Teachers’ Circle of Hawai‘i.” Principal Investigator. Total award \$72,550. Dates 09/15/2011 through 08/15/2012.

**AMS Simons Travel Grant** (Declined.) \$4,000 over two years. Awarded June 1, 2012.

**Number Theory Foundation** “Women in Numbers 2” (travel support for graduate students and young faculty). Principal Investigator. Total award \$5,000. Dates 11/06/2011 through 11/11/2011.

**NSF Graduate Teaching Fellows in K–12 Education** “SUPER-M: School and University Partnership for Educational Renewal in Mathematics.” Co-PI, award number NSF DGE-0841223. Total award \$2,197,284. Dates 04/15/2009 through 07/31/2014.

**Association for Women in Mathematics** Travel Grant to attend “Women in Numbers” workshop. Total award \$1,300. Dates 11/02/2008 through 11/07/2008.

**NSF Instructional Materials Development** “Developing Mathematical Research Skills.” Co-PI, award number NSF DRL-9818736. Total award \$899,564. Dates 06/01/1999 through 07/31/2002.

RESEARCH  
PUBLICATIONS

M. Manes, and B. Thompson. “Periodic points in towers of finite fields for polynomials associated to algebraic groups.” (Submitted.)

M. Manes, and J.H. Silverman. “A classification of degree 2 semi-stable rational maps  $\mathbb{P}^2 \rightarrow \mathbb{P}^2$  with large finite dynamical automorphism group.” (Forthcoming in *Annales de la Faculte des Sciences de Toulouse*.)

J. Anderson, I. Bouw, O. Edjer, N. Girgin, V. Karemaker, and M. Manes. “Dynamical Belyi maps.” (Forthcoming in *Women in Numbers Europe 2*, Springer (2018)).

A. Bridy, P. Ingram, R. Jones, J. Juul, A. Levy, M. Manes, S. Rubinstein-Salzedo, and J.H. Silverman. “Finite ramification for preimage fields of postcritically finite morphisms.” (Forthcoming in *Mathematical Research Letters*.)

F. Balestrieri, J. Berg, M. Manes, J. Park, and B. Viray. “Insufficiency of the Brauer-Manin obstruction for Enriques surfaces.” In *Directions in Number Theory: Proceedings of the 2014 WIN3 Workshop*, Springer (2016): 1–31.

I. Bouw, J. Cooley, K. Lauter, E. Lorenzo Garcia, M. Manes, R. Newton, and E. Ozman. “Bad reduction of genus-3 curves with complex multiplication.” In *Women in Numbers Europe*, Springer (2015): 109–151.

X. Faber, M. Manes, and B. Viray. “Computing conjugating sets and automorphism groups of rational functions.” *J. Algebra*. **423** (2015): 1161–1190.

B. Hutz and M. Manes. “The field of definition for dynamical systems on  $\mathbb{P}^N$ .” *Bull. Inst. Math. Acad. Sin.* **9** (2014): 585–601.

D. Lukas, M. Manes, and D. Yap. “A census of quadratic post-critically finite rational functions defined over  $\mathbb{Q}$ ” *LMS J. Comput. Math.* **17** (2014): 314–329.

A. Levy, M. Manes, and B. Thompson. “Uniform bounds for pre-periodic points in families of twists.” *Proceedings of the AMS*. **142** (2014): 3075–3088.

R. Jones and M. Manes. “Galois theory of rational functions with nontrivial automorphisms.” *Comment. Math. Helv.* **89** (2014): 173–213.

---

Tenure Awarded 2013

---

M.-J. Bertin, A. Feaver, J. Fuselier, M. Lalín, and M. Manes. “Mahler measure of some singular  $K3$ -surfaces.” In *Women in Numbers 2, Contemp. Math.* **606** (2013): 237–247.

M. Manes and Y. Yasufuku. “Explicit descriptions of quadratic maps on  $\mathbb{P}^1$  defined over a field  $K$ .” *Acta Arithmetica* **148** (2011): 257–267.

B. Malmskog and M. Manes. “Ramified Covers of Graphs and the Ihara Zeta Functions of Certain Ramified Covers.” In *WIN — Women in Numbers, Fields*

*Institute Communications* **60** (2011): 237–247.

B. Malmskog and M. Manes. “Almost divisibility in the Ihara zeta functions of certain ramified covers of  $q + 1$ -regular graphs.” *Linear Algebra and its Applications* **432** (2010): 2486–2506.

X. Faber, B. Hutz, P. Ingram, R. Jones, M. Manes, T. Tucker, and M. Zieve. “Uniform bounds on pre-images under quadratic dynamical systems.” *Mathematical Research Letters* **16** (2009): 87–101.

M. Manes. “Moduli spaces for families of rational maps on  $\mathbb{P}^1$ .” *Journal of Number Theory* **129** (2009): 1623–1663.

M. Manes. “ $\mathbb{Q}$ -rational cycles for degree-2 rational maps having an automorphism.” *Proceedings of the London Mathematical Society* **96** (2008): 669–696.

EDITOR OF A  
VOLUME

J. Balakrishnan, A. Folsom, M. Lalín, and M. Manes. *Women in Numbers 4, Contemporary Mathematics* (expected 2019).

---

Tenure Awarded 2013

---

C. David, M. Lalín, and M. Manes. *Women in Numbers 2, Contemporary Mathematics* (2013).

EDUCATION  
PUBLICATIONS

M. Manes and L. Venenciano. “Mathematics Research Experiences for Teachers.” (submitted)

L. Venenciano and M. Manes. “Developing Teachers’ Own Mathematical Practice: A Model for Professional Development.” (submitted)

M. Manes. “Mathematics for Elementary Teachers” student text and instructor notes. Available free online: <http://math.hawaii.edu/111> and <http://math.hawaii.edu/111-instructors>. (2013) Will be a Creative Commons licensed open educational resource (OER) by January, 2018.

---

Tenure Awarded 2013

---

M. Manes. “Building Bridges between Universities and K–12 Schools.” *Notes of the Canadian Mathematical Society* **42.5** (Oct/Nov 2010): 8 – 9.

*Learning Math: Geometry*. Annenberg CPB. Multimedia online geometry course for teachers of grades K–8.

*IMPACT Mathematics* (one of four lead authors). Glencoe, McGraw Hill. Middle school program focused on algebra for all students.

*Connected Geometry* (part of author team). Glencoe, McGraw Hill. High school geometry program. Now part of the [CME Project Secondary Mathematics Curriculum](#).

*Mathematical Methods in High School* (part of author team). Alternative pre-calculus program. Now part of the [CME Project Secondary Mathematics Curriculum](#).

A. Cuoco and M. Manes. “When Memory Fails: Putting Limitations to Good Use.” *Mathematics Teacher* **94.6** (2001): 489–493.

M. Manes. “A special case of the isoperimetric problem.” *Mathematics Teacher* **91.2** (1998): 100.

P. Frorer, O. Hazzan, and M. Manes. “Revealing the Faces of Abstraction.” *International Journal for Computers in Mathematics Learning* **2.3** (1997): 217–228.

M. Manes and S. Stenglein. “Projects.” *Mathematics Teacher* **89.7** (1996): 612–614.

E. P. Goldenberg and M. Manes. “Technology Tips: Entrance Ramps to the Information Superhighway!” *Mathematics Teacher* **88.1** (1995): 56–58.

M. Manes. “Technology Tips: A Global Electronic Community.” *Mathematics Teacher* **87.8** (1994): 650–651.

RESEARCH  
SUPERVISED

**TJ Combs**, Ph.D. Thesis on “Galois representations of cubic polynomials.” University of Hawai‘i at Mānoa, Ph.D. Spring 2019 (expected).

**Elliot Ossanna**, Master’s Thesis on “Pascal-like triangles and fractal dimension.” University of Hawai‘i at Mānoa, December 2017 (expected).

**Bianca Thompson**, Ph.D. Thesis on “Arithmetic dynamics: Twists, finite field statistics, and local fields.” University of Hawai‘i at Mānoa, Ph.D. Spring 2015.

---

Tenure Awarded 2013

---

**Diane Yap**, Ph.D. Thesis on “Degree 2 rational maps: Potential good reduction and post-critical finiteness.” University of Hawai‘i at Mānoa, Ph.D. Fall 2012.

**Gretel Sia**, Master’s Thesis on “A survey of the discrete logarithm problem.” University of Hawai‘i at Mānoa, May 2011.

AWARDS

Winner, Regent's Medal for Excellence in Teaching, University of Hawaii (2017).

Winner, AWM Service Award, Association for Women in Mathematics (2017).

Winner, Haimo Award for Distinguished College or University Teaching of Mathematics, MAA Golden Section (2015).

---

Tenure Awarded 2013

---

Winner, University of Hawai'i Department of Mathematics Faculty Excellence in Teaching Award (2013).

Winner, Brown University Department of Mathematics Outstanding Teaching Prize (2006).

Finalist, Brown University Presidential Award for Excellence in Teaching (2005).

CONFERENCE  
ORGANIZATION

**Association for Women in Mathematics Panel: Being a mathematician and an activist**, Joint Meetings of the MAA and AMS. San Diego, CA (January, 2018).

**Women in Numbers 4**, Banff International Research Station. Banff, Ontario, Canada (August, 2017).

**Association for Women in Mathematics Panel: Mentoring women in mathematics**, Joint Meetings of the MAA and AMS. Atlanta, GA (January, 2017).

**The Galois theory of orbits in arithmetic dynamics**, American Institute of Mathematics. San Jose, CA (May, 2016).

**Association for Women in Mathematics Panel: Research collaboration conferences for women**, Joint Meetings of the MAA and AMS. Seattle, WA (January, 2016).

**Special Session on Number Theory and Cryptography**, Joint Meetings of the MAA and AMS. Seattle, WA (January, 2016).

**Silvermania: Arithmetic 2015**, Brown University. Providence, RI (August, 2015).

---

Tenure Awarded 2013

---

**Global Arithmetic Dynamics Workshop**, Institute for Computational and Experimental Research in Mathematics. Providence, RI (March, 2012).

**Hawai‘i Conference in Algebraic Number Theory, Arithmetic Geometry, and Modular Forms**, University of Hawai‘i at Mānoa. Honolulu, HI (March, 2012).

**Special Session on Arithmetic Geometry**, AMS Western Sectional Meeting at University of Hawai‘i at Mānoa. Honolulu, HI (March, 2012).

**Special Session on Dynamical Systems in Algebraic and Arithmetic Geometry**, Joint Meetings of the MAA and AMS. Boston, MA (January, 2012).

**Women in Numbers 2 Workshop**, Banff International Research Station. Banff, Ontario, Canada (November, 2011).

**Special Session on Number Theory**, Association for Women in Mathematics “40 Years and Counting” Conference. Providence, RI (September, 2011).

**Special Session on Arithmetic and Nonarchimedean Dynamics**, Joint Meetings of the MAA and AMS. San Francisco, CA (January, 2010).

SELECTED  
PLENARY &  
INVITED TALKS

“Some arithmetic properties of post-critically finite rational functions.” Southern California Number Theory Day. (October, 2014).

“A census of quadratic post-critically finite rational functions defined over  $\mathbb{Q}$ .” Algorithmic Number Theory Symposium (ANTS XI). GyeongJu, South Korea. (August, 2014)

“Computing Automorphism Groups of Rational Functions.” International Workshop on Diophantine Problems and Arithmetic Dynamics. Seoul, South Korea. (January, 2014)

---

Tenure Awarded 2013

---

“Variations on a Theme-Fields of Definition, Fields of Moduli, Automorphisms, and Twists.” Conference on Diophantine Problems and Arithmetic Dynamics. Taipei, Taiwan. (June, 2013)

“Arithmetic Dynamics and Finite Fields.” Sage Days 42 (Third Women in Sage conference). Wallace Falls Lodge, WA (July, 2012).

“Variations on a Theme: Fields of definition, fields of moduli, automorphisms, and twists.” Workshop on Moduli Spaces Associated to Dynamical Systems at the Institute for Computational and Experimental Research in Mathematics. Providence, RI (April, 2012).

“Habits of Mind: An organizing principle for mathematics curriculum and instruction.” Campbell and Kapolei Complex Areas Secondary Mathematics



Workshop on Developing Algebraic Thinking. Honolulu, HI (April, 2011).

“Euler’s Elegant Equation: The five most important constants in mathematics and the amazing formula that ties them together.” Hawai‘i Council of Teachers of Mathematics Spring Conference. Honolulu, HI (February, 2011).

“The Berkovich projective line.” Workshop in Dynamics at the University of Illinois at Chicago. Chicago, IL (May, 2010).

“Level structure on  $M_d$  and modular curves for rational maps with automorphisms.” Bellairs Workshop in Number Theory at the Bellairs Research Institute. Barbados (May, 2010).

SELECTED  
SPECIAL SESSION TALKS “Dynamical Belyi maps.” Mathematical Congress of the Americas. Montreal, QC, Canada. (July, 2017).

“Bad reduction of genus 3 curves with Complex Multiplication.” Joint Meetings of the MAA and AMS. Atlanta, GA (January, 2017).

“Characterizing cyclic quartic extensions by automorphism polynomials.” Joint Meetings of the MAA and AMS. Seattle, WA (January, 2016).

“In Their Own Words: Teachers reflect on their MTC experiences.” Joint Meetings of the MAA and AMS. Seattle, WA (January, 2016).

“Bad reduction of genus 3 curves with complex multiplication.” AMS Sectional Meeting. Las Vegas, NV (April, 2015).

“Modeling with Mathematics: MTC sessions that encourage and illuminate this CCSS Mathematical Practice.” Joint Meetings of the MAA and AMS. San Antonio, TX (January, 2015).

---

Tenure Awarded 2013

---

“Berkovich dynamics of certain quadratic rational maps.” AMS Sectional Meeting. Las Vegas, NV (April, 2011).

“Galois theory of quadratic rational functions with a non-trivial automorphism.” Joint Meetings of the MAA and AMS. San Francisco, CA (January, 2010).

“Rational periodic points for rational maps with automorphisms.” AMS Sectional Meeting. Hoboken, NJ (April, 2007).

“Moduli spaces related to iteration of rational maps on  $\mathbb{P}^1$ .” AMS Sectional Meeting. Storrs, CT (October, 2006).

SEMINAR TALKS “Dynamical Belyi maps.” Purdue University Number Theory Seminar (April, 2017).

“Curve-based cryptography, a tour of recent developments.” University of Hawai‘i at Mānoa Colloquium (October, 2016).

“Problem solving to develop teachers’ mathematical practice and raise awareness for teaching practice.” Association of Mathematics Teacher Educators Conference, Irvine, CA (January, 2016).

“Some arithmetic properties of post-critically finite rational functions.” University of Colorado at Boulder Number Theory Seminar (March, 2015). University of New Mexico Colloquium (April, 2015). Stony Brook University (December, 2015).

“Galois theory of quadratic rational functions.” UNC and Duke joint Number Theory seminar. Chapel Hill, NC. (November, 2013). UCSD Number Theory Seminar (October, 2014).

---

Tenure Awarded 2013

---

“Dynamical units.” Closing event for the Institute for Computational and Experimental Research in Mathematics semester program in Complex and Arithmetic Dynamics. Providence, RI (May, 2012).

“Benford’s Law: Tables of logarithms, tax cheats, and the leading digits phenomenon.” USC Women in Math Seminar. Los Angeles, CA (April, 2008). University of Hawai‘i at Mānoa Honors Seminar. Honolulu, HI (September, 2008).

“Uniform boundedness conjectures and theorems for dynamical systems.” UCLA Number Theory Seminar. Los Angeles, CA (January, 2008).

“Dynamic modular curves.” USC Algebra Seminar. Los Angeles, CA (October, 2007). UC Irvine Number Theory Seminar. Irvine, CA (November, 2007). Pomona College Number Theory and Combinatorics Seminar. Pomona, CA (December, 2007).

Brown University Graduate Student Seminar, Providence, RI:

“Grothendieck’s theory of dessins d’enfants.” (April, 2007).

“Hilbert’s third problem: High school geometry and higher algebra.” (February, 2006).

“The moduli space of rational functions of degree  $d$ .” (November, 2005).

“The  $p$ -adics: Some arithmetic, some geometry.” (October, 2004).

“An introduction to modular forms.” (August, 2003).

“Habits of Mind: An organizing principle for mathematics curriculum and instruction.” University of Connecticut Mathematics Education Seminar. Storrs, CT (February, 2007). Colorado State University. Pueblo, CO (January, 2007). California Polytechnic University. Pomona, CA (January, 2007).

“Arithmetic dynamics of rational maps.” Colorado State University. Pueblo, CO (January, 2007). University of Hawai‘i at Mānoa. Honolulu, HI (January, 2007).

OTHER TALKS

“Hilbert’s Third Problem, Scissors Congruence, and the Dehn Invariant.” Graduate Student Seminar, University of Hawai‘i at Mānoa. Honolulu, HI (October 2016).

“All’s fair in love and chaos.” Welcome event for new graduate students, University of Hawai‘i at Mānoa. Honolulu, HI (August, 2012 and 2015).

“Chaotic Dynamical Systems.” University of Hawai‘i Math Ohana, University of Hawai‘i at Mānoa. Honolulu, HI (October, 2013).

---

Tenure Awarded 2013

---

“Making a divergent series converge.” Pacific Undergraduate Research Experience in Mathematics at the University of Hawai‘i at Hilo. Hilo, HI (June, 2012).

University of Connecticut Math Club, Storrs, CT:

“Making a divergent series converge.” (April, 2012).

“Chaotic dynamical systems.” (February, 2007).

“The Discrete Log Problem and Cryptography.” UH Mānoa Information & Computer Sciences Graduate Seminar. Honolulu, HI (September, 2011).

“Benford’s Law: Tables of logarithms, tax cheats, and the leading digit phenomenon.” Luncheon talk for the Honolulu chapter of the Association of Certified Fraud Examiners. Honolulu, HI (September, 2011).

“Integer and rational points.” Pacific Undergraduate Research Experience in Mathematics at the University of Hawai‘i at Hilo. Hilo, HI (June, 2011).

“Mathematics: Some perspective.” Math+Girls = Power workshop. Honolulu, HI (February, 2011).

Brown University Undergraduate Student Seminar, Providence, RI:

“Escher and the Droste effect.” (Spring, 2005).

“Sharkovsky’s theorem and chaotic dynamics.” (Spring, 2004).

“Faltings’ proof of the isogeny theorem.” Brown University Topics Exam. Providence, RI (January, 2004).

“Abelian varieties.” Brown Graduate Algebraic Geometry Course. Providence, RI (May, 2003).

“Algebra and cryptography” (co-presented with Al Cuoco). Salem State College. Salem, MA (December, 1999).

“Multiple approaches to conics” (co-presented with Al Cuoco). Salem State College. Salem, MA (December, 1999).

“Student Learning in Linear Algebra: The case of the dot product.” Joint Meetings of the MAA and AMS. San Diego, CA (January, 1997).

“Making the Cut: Geometry through paper and scissors.” Vermont Institute for Science, Math, and Technology. Randolph, VT (May, 1995).

“Using technology to explore an optimization problem” (co-presented with Al Cuoco). National Educational Computing Conference. Boston, MA (June, 1994).

COURSES  
TAUGHT

University of Hawai‘i at Mānoa:

- Survey of Mathematics (Math 100).
- Mathematics for Elementary Teachers I and II (Math 111 and 112).
- Calculus for Business and the Social Sciences (Math 203).
- Calculus I (Math 241).
- Introduction to Advanced Mathematics (Math 321).
- History of Mathematics (Math 203 / 327).
- Introduction to Abstract Algebra (Math 413).
- Introduction to the Theory of Numbers (Math 420).
- Senior Seminar (Math 480).
- Modern Algebra (Math 611).
- Group Theory (Math 613).
- Topics in Mathematics: Arithmetic and Algebraic Geometry (Math 649).
- Directed Reading and Research (Math 499 and Math 699).

University of Southern California:

- Foundations of Discrete Mathematics (Math 400).
- Applied Algebra: Cryptography (Math 370).

Brown University:

- Analytic Geometry and Calculus (Math 6).
- Introductory Calculus I and II (Math 9 and 10).
- Intermediate Calculus (Math 18).
- Linear Algebra (Math 52).

UNIVERSITY SERVICE	Teacher Education Committee (2012–2014, 2016–2018). Writing Intensive Focus Board (2016–2019). Arts & Sciences Faculty Executive Senate (elected for 2013–2015). Engaged Learning Working Group (2013–2014). Consultant for Curriculum Research and Development Group projects. Presenter / panelist for Center for Teaching Excellence events: Summer Institute for Teaching “Engage Your Classroom, Invigorate Yourself” (2017). Faculty Focus Group (January 2012). Smart Starts: Productive, Sane Work-Life Balancing in Your First Semesters (New Faculty Orientation August 2011). Striking a Balance: Teaching, Research, Service (New Faculty Orientation, August 2009). Ph.D. committees: Darienne Dey (College of Education, expected 2018). Sean Yagi (College of Education, 2015). Anne Wong Sylva (College of Education, 2014).
DEPARTMENT SERVICE	<b>University of Hawai‘i</b> Department Personnel Committee (elected for 2016–2018). Teaching Awards Committee (2014–2017) Hiring committee (2015–2017). Graduate committee (2008–2016). Curriculum committee (2008–2013). Putnam Exam faculty adviser (2008–2009).  <b>University of Southern California</b> Participant in Women in Mathematics group, including mentoring graduate students on the job application process. Algebra qualifying exam committee.  <b>Brown University</b> Member and co-organizer of Brown University’s Rose Whelan Society (an affinity group for women graduate students and postdocs in the Mathematics and Applied Mathematics Departments). Co-organizer of Brown University’s graduate student seminar. Participant in Mathematics Department panels including: applying to graduate school, writing grant proposals for graduate students, and careers in mathematics for undergraduates.
PROFESSIONAL ORGANIZATION SERVICE	Women in Numbers network: Steering Committee chair (2014–2018) Association for Women in Mathematics: Research Collaboration Conferences for Women Committee chair (2015–2019).

Research Networks Committee member (2015–2017).

JMM Committee chair (2016–2018)

Career panel organizer (2016–2018)

Meetings Committee member (2014–2017)

Mathematical Association of America:

Golden Section Teaching Awards Committee member (2016–2019).

American Mathematical Society:

Section Meetings Travel Grants Committee (2018–2021).

American Institute of Mathematics:

Human Resources Board member (2015–2018)

OTHER  
PROFESSIONAL  
SERVICE

Referee work: Acta Arithmetica, Journal for Algebra and Applications, Algebra and Number Theory, Annales de l'Institut Fourier, Crelle, IMRN, Rocky Mountain Journal of Mathematics, Annales des Sciences Mathématiques de Québec, Involve, Proceedings of the AMS, Graphs and Combinatorics, Experimental Mathematics.

Reviewer for AMS Math Reviews.

Contributor to Sage (free open-source mathematics software system).

Minicourse Instructor: Institute for Computational and Experimental Research in Mathematics semester program on “Complex and Arithmetic Dynamics.” Providence, RI (March, 2012).

Minicourse Instructor: “Summer School on Arithmetic Dynamics.” University of Georgia, Athens, GA (May, 2011).

Judge for Association of Women in Mathematics essay contest (March 2011).

Teaching Assistant: Arizona Winter School on “Number Theory and Dynamics.” University of Arizona, Tucson, AZ (March, 2010).

OUTREACH

Established the Math Teachers' Circle of Hawai'i.

co-organized four-day retreat and led two days of math activities (Summers 2011, 2012, 2013).

co-organized monthly Saturday workshops (AY 2011–2018).

expanding to second MTC at UHWO (Summer 2017).

Invited guest presenter for Maunawaili Elementary School teachers (August, 2017).

Invited guest presenter for Math Teachers Circles in Denver (March, 2015) and Albuquerque (April, 2015).

Presented hands-on workshops at Hawai'i Council of Teachers of Mathematics conferences:

Optimization (February, 2017).  
Conway's Rational Tangles (September, 2012).  
Surprising Connections (February, 2011).  
Making the Cut: Geometry through paper and scissors (October, 2010).

Consulted with Honolulu Academy of Arts for exhibit focused on mathematics (Summer 2012).

Guest speaker at PROMYS for Teachers workshop on the mathematics of cryptography. Boston, MA (April, 2012).

Invited speaker at the American Society of Fraud Examiners Honolulu Chapter. Honolulu, HI (September, 2011).

Mathematics consultant for "Designing Algebra Resources for Teaching" Workshops (AY 2010–2011).

Presented hands-on workshops at Campbell and Kapolei Complex Areas Secondary Mathematics Workshop:

Surprising Connections (April, 2011).  
The Mathematics of Cryptography (April, 2011).

Co-organized mathematics workshops for teachers as part of the SUPER-M program:

Ke Kula Ni'ihau O Kekaha School, Kekaha, Kaua'i (November, 2011).  
'Aikahi Elementary School, Kailua, O'ahu (November, 2011).  
Ha'aheo Elementary School, Hilo, Big Island (November, 2010).  
Moanalua Middle School, Honolulu, O'ahu (November, 2010).  
Lokelani Intermediate School, Kihei, Maui (November, 2009).  
Pauoa Elementary School, Honolulu, O'ahu (November, 2009).

Judge at Hawai'i State Science Fair (March, 2011).

Keynote speaker for parents at "Math+Girls = Power" event at Sacred Hearts Academy, Honolulu, HI (February, 2011).

Participant in University of Hawai'i systemwide "Math Summits."  
Co-organizer of the first "Beautiful Day of Math on Moloka'i," (March, 2010).

Co-organizer of the first "Beautiful Day of Math for Girls and their Families" at UH Mānoa (December, 2008).

PROFESSIONAL  
SOCIETIES

American Mathematical Society.  
Association for Women in Mathematics.  
Mathematical Association of America  
Graduate Women in Science.

National Council of Teachers of Mathematics.  
Hawai'i Council of Teachers of Mathematics.

COMPUTER EXPERTISE Sage, Pari, basic programming, Mathematica, Maple, HTML.

LANGUAGES English (native),  
American Sign Language (fluent), and  
French and Spanish (reading ability).

CITIZENSHIP USA.