

## Cynthia B. Francisco

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513 Mathematical Sciences  
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### Education:

- M.S., Curriculum and Instruction, Education, Cornell University, August 2003.  
*Thesis: "Honors work and a standards-based curriculum in a heterogeneous mathematics classroom."*  
Adviser: David Henderson, Department of Mathematics
- M.S., Mathematics, Cornell University, August 2002.  
Including the doctoral core classes in Real Analysis, Algebra, and Algebraic Topology.
- B.S., Mathematics (Minor: Computer Science), College of William and Mary, May 1999  
*Graduated Summa Cum Laude*  
*Highest Honors for senior thesis: "Linear Orderings: A Sampler."*  
Adviser: David Lutzer

[For a complete list of graduate courses and course grades, see Addendum to this vita.]

### Employment:

- *Oklahoma State University, Department of Mathematics*  
**Adjunct Instructor/Lecturer**, Aug. 2007 - Dec. 2010, Aug. 2016 - present  
Designed and taught a fully online section of Business Calculus (Aug. 2016-present).  
Other Courses Taught: Geometric Structures (for prospective elementary teachers),  
College Algebra, Mathematical Functions and Their Uses (modeling pathway course).  
**Coordinator of College Algebra**, Aug. 2008 - Dec. 2010  
Constructed and implemented a course redesign to a modified emporium style with the goal of greater student engagement in the course, increased feedback for students, and more one-on-one support. Reorganized the course from traditional large lecture classes and paper/pencil homework to small sections once per week plus flexible time spent in a computer lab with instructors and tutors. Staffed and supervised the computer lab, which was open over sixty hours per week. Included over half of our students in the redesign annually, up to the capacity of our lab. Coordinated all sections of College Algebra, both traditional and redesigned, serving 2000 students annually.  
**Director of Mathematics Learning Resource Center**, Aug. 2009 - Dec. 2010  
Hired, supervised, and trained a staff of approximately 35 undergraduates. Managed budgets and drafted tech fee proposals for continuing funding.
- *Oklahoma State University, College of Engineering, Architecture, and Technology*  
**Instructor, ConocoPhillips Summer Bridge Program**, Summers 2008 and 2009  
Taught Precalculus to a diverse group of incoming freshman CEAT students.
- *Rock Bridge High School, Columbia, MO*  
**Mathematics Teacher**, grades 10-12, 2004-2007  
Taught both traditional courses and inquiry-oriented, applications-based courses using the Core-Plus Mathematics curriculum (NSF-funded, research-based curriculum).  
Courses Taught: AP Calculus AB, Integrated Mathematics 3 (junior level), Algebra 2, Integrated Mathematics 2 (sophomore level), Integrated Mathematics 2B (slower-paced course for weaker students).

- *Ithaca College, Department of Mathematics and Computer Science*  
**Instructor, 2003-2004**  
 Taught a variety of courses with an emphasis on applications and conceptual understanding. Mathematics Fundamentals explored elementary material conceptually, including fractions, percents, area, exponents, and functions. Power Algebra was similar to a College Algebra course with an emphasis on applications.  
 Courses Taught: Mathematics Fundamentals, Power Algebra, Calculus for Decision Making, Business Statistics, Basic Statistical Reasoning
- *Cornell University, Learning Strategies Center*  
**Instructor, Prefreshman Summer Program, Summers 2002 and 2003**  
 Taught Introductory Calculus to minority and economically-disadvantaged prefreshmen students.
- *Cornell University, Department of Mathematics*  
**Graduate Teaching Assistant, 1999-2003**  
 Independently designed and taught a new freshmen writing seminar, Experiencing Mathematics through Writing. Topics included an intuitive exploration of non-Euclidean Geometry, mostly on a sphere, an intuitive idea of non-standard analysis (Does  $\overline{.999}$  really equal 1? What are the implications if they are not equal? What assumptions underlie the “proofs” of this statement?), prime numbers, modular arithmetic, divisibility tests, and exploring the idea of dimensions.  
 TA for Courses: Calculus for the Life and Social Sciences, Finite Mathematics for the Life and Social Sciences, Calculus for Engineers II, History of Mathematics, Euclidean and Spherical Geometry
- *National Security Agency*  
**Cryptologic Mathematician, 1999**  
**Analytic Aide, Undergraduate Training Program, 1995-1999**

### Certifications:

- **Oklahoma Teaching Certificates in Intermediate and Advanced Mathematics, Grades 5-12, May 2007-present.**
- **Missouri Initial Professional Certificate in Mathematics 5-9, 9-12, April 2004-2008.**
- **New York State Provisional Certification in Mathematics 7-12, September 2003-2008.**

### Grants and Projects:

- Coauthor, Lead Contact, and Course Coordinator, College Algebra at Oklahoma State University, Colleagues Committed to Redesign Round II, a FIPSE-funded program through the National Center for Academic Transformation, 2008-2009. Provided general support, including travel funding for OSU’s four-person team to attend conferences.
- Coauthor, “Data Projectors for Mathematics Classes,” Columbia Public Schools Foundation Technology Grant, funded for \$5,291.80, Spring 2005.

### Presentations:

- “College Algebra Students' Perceptions Related to Participating in Computer-aided Instruction” with Douglas Aichele, Juliana Utley, Benjamin Wescoatt, and Rae Tree in the OSU Mathematics Education Seminar, Sept. 2010.

- “Computer-aided College Algebra: A Research Study Conducted at Oklahoma State University” with Douglas Aichele, Juliana Utley, Benjamin Wescoatt, OK-AR MAA Meeting, Siloam Springs, AR, March 2010.
- “Oklahoma State’s College Algebra C2R Pilot Plan,” Colleagues Committed to Redesign Disciplinary Institute, National Center for Academic Transformation, New Orleans, LA, April 2008.
- “Redesign Plan: Oklahoma State, College Algebra,” Feedback Forum, The Redesign Alliance Second Annual Conference, Orlando, FL, March 2008.
- "Revisiting College Algebra with Computer Technology," the OSU Mathematics Education Seminar, Sept. 2008.
- “Course Redesign,” in the OSU Mathematics Education Seminar, Nov. 2007.

#### **Awards:**

- Edward E. Sheldon Award for Women Teachers, Cornell University, May 2003.
- Lord Botetourt Medal for the highest academic achievement in William and Mary’s 1999 graduating class, May 1999.
- Ann Callahan Chappell Award for the most outstanding inductee into William and Mary’s chapter of Phi Beta Kappa, December 1998.

#### **Community Outreach:**

- Elementary school tutoring, Westwood Elementary, Fall 2017-present. Tutoring 3<sup>rd</sup> through 5<sup>th</sup> grade students, three days per week.
- Workshop Leader, Expanding Your Horizons program for middle-school girls, 2000, 2002, and 2003.

#### **Professional Service:**

- Member, Lower-Division Restructuring Committee, OSU math department, Fall 2010.
- Member, Placement Committee, OSU math department, 2009-2010.
- Member, Lower-Division Instruction Committee, OSU math department, 2007- Dec. 2010.
- MyMathLab Demo for OSU Academic Advisors, Feb. 2009.
- Reviewer of Trigsted’s MyMathLab College Algebra textbook (in development), Pearson Education, October 2007 and March 2008.
- Member, District’s Math Program Review Committee, Columbia Public Schools, 2005-2007.
- Member, Student Support Committee, Rock Bridge High School, 2005-2007.
- Member, Student Support Task Force, Rock Bridge High School, 2006-2007.
- Member, Multicultural Committee, Rock Bridge High School, 2006-2007.
- Member, Technology Committee, Rock Bridge High School, 2004-2006.
- Pilot teacher, Core-Plus, Course 3, 2<sup>nd</sup> edition. Traveled to Western Michigan University to give input to curriculum authors, December 2006 and April 2007.
- Teacher, ACT Super Saturday Review Sessions, RBHS, March 4, 2006 and March 3, 2007.
- Book Study Leader, “Why are All the Black Kids Sitting Together in the Cafeteria?” Rock Bridge High School, November-December 2005.
- Reviewer of selected chapters of Kime, Clark, and Michael’s Explorations in College Algebra, 3<sup>rd</sup> edition, John Wiley & Sons publishers, November 2003, February 2004, and April 2004.

- Workshop Assistant, “Teaching Undergraduate Geometry,” Mathematical Association of America workshop, Cornell University, June 2001.

### Publication

- D.B. Aichele, C. Francisco, J. Utley, and B. Wescoatt, Computer-Aided College Algebra: Learning Components That Students Find Beneficial. *MathAMATYC Educator* 2 (2011), no. 2, 12-19.

### Conferences and Workshops Attended:

- “Preparing Online Instructors” course, Institute for Teaching & Learning Excellence, Oklahoma State University, October-November, 2015.
- Precalculus Math Forum, Pearson Education, Boston, MA, Oct. 2009.
- Colleagues Committed to Redesign Disciplinary Institute, National Center for Academic Transformation, New Orleans, LA, April 2008.
- The Redesign Alliance Annual Conference, Orlando, FL, March 2009.
- The Redesign Alliance Annual Conference, Orlando, FL, March 2008.
- Course Redesign Workshop, Pearson Education and the National Center for Academic Transformation, Tucson, AZ, October 2007.
- Mathematics and Science Teaching Institute for Beginning Teachers, University of Missouri, July 10-13, 2006, with follow-up assignments during the 2006-7 school year.
- COMPASS Points, meeting of a national network of teachers implementing reform math curricula, Golden, CO, October 2006.
- “Mathematics Teachers: Using Graphing Calculators in the Classroom” short course, University of Missouri, April 21-22, 2006.
- National Council of Teachers of Mathematics Annual Meeting, St. Louis, April 26-29, 2006.
- AP Calculus AB/BC workshop, St. Louis, October 21, 2005.
- MNEA Beginning Teacher Assistance Program workshop, Rolla, MO, October 7, 2005.
- AP Calculus AB Summer Institute, Truman State University, July 25-29, 2005.
- Getting to the Core week-long math workshops, Columbia Public Schools, July 2004, June 2005, August 2005, July-August 2006.
- Joint Meetings of the MAA and AMS, Phoenix, AZ, January 2004.
- Cornell/Schools Mathematics Resource Program workshops, Ithaca, NY, 2001-2003.
- “Teaching Undergraduate Geometry,” Mathematical Association of America workshop, Cornell University, June 2001.
- Nebraska Conference for Undergraduate Women in Mathematics, March 1999.

### Professional Memberships

- Mathematical Association of America (MAA)
  - WEB SIGMAA (Mathematics Instruction via the Web)
- National Council of Teachers of Mathematics (NCTM)
- Association of Mathematics Teacher Educators (AMTE)

**Addendum: Graduate Coursework at Cornell University<sup>1</sup>****Mathematics Courses<sup>2</sup>**

## Doctoral Level Courses

- Math 611, Real Analysis, doctoral course class (A)  
Text: *Real and Complex Analysis* by Walter Rudin  
Instructor: Eugene Dynkin
- Math 631, Algebra, doctoral course class (A-)  
Text: *Algebra: A Graduate Course* by I. Martin Isaacs  
Instructor: R. Keith Dennis
- Math 651, Algebraic Topology, doctoral course class (A)  
Text: *Algebraic Topology* by Allen West  
Instructor: Reyer Sjamaar
- Math 661, Geometric Topology (A)  
Instructor: Jim West
- Math 681, Logic (A)  
Instructor: Anil Nerode
- Math 681, Logic, different collection of topics (S)  
Instructor: Sergei Artemov
- Math 735, Topics in Algebra: Analytic Number Theory (A)  
Instructor: Anthony Kable
- Math 735, Topics in Algebra: Convex Polytopes and Geometric Combinatorics (S)  
Text: *Lectures on Polytopes* by Günter M. Ziegler  
Instructor: Louis Billera
- Math 787, Set Theory (S)  
Text: *Descriptive Set Theory* by Yiannis M. Moschovakis  
Instructor: Richard Shore
- Math 784, Recursion Theory (S)  
Text: *Recursively Enumerable Sets and Degrees* by R.I. Soare  
Instructor: Richard Shore

## Upper Undergraduate/Masters-Level Equivalent Courses

- Math 413 Honors Intro Analysis (A)  
Text: *The Way of Analysis* by Robert S. Strichartz with additional problems from *Principles of Mathematical Analysis* by Walter Rudin  
Instructor: Ravi Ramakrishna
- Math 418 Function Theory (A+)  
Text: *Complex Variables* by Norman Levinson and Raymond M. Redheffer  
Instructor: Eugene Dynkin

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<sup>1</sup> Course grades listed in parentheses; a grade of S indicates a passing score in a course that was graded pass/fail only by instructor or department policy.

<sup>2</sup> When no textbook is listed for a math course, no textbook was used in the course.

### **Education and Math Education Courses**

- Educ 311, Educational Psychology (A)
- Educ 402, Knowing and Learning in Science, Math, and Agriscience (A)
- Educ 614, Gender, Context, and Epistemological Development (S)
- Writing 700, Teaching Writing (S)
- Educ 403, Teaching Science, Math, and Agriscience (A+)
- Educ 609, Methods for Interpretive Research (S)
- Educ 601, Practicum (S)
- Educ 602, Teaching Agriculture, Science, Mathematics: Methods, Materials, Practice (A)
- Educ 635, Curriculum (A+)
- Math 507, Issues in Secondary Mathematics (A)
- Math 508, Teaching Secondary Mathematics (S)
- Math 790, Supervised Reading and Research (S)