Silva Chang

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EDUCATION

MS, MPhil in Computer Science 1985
Yale University, New Haven, CT.
Admitted to Ph.D. candidacy.

BA in Mathematics, East Asian Studies 1982
Oberlin College, Oberlin, OH.

TEACHING AND ADVISING

Instructor and Lecturer 2008 to present
Department of Applied Mathematics, University of Colorado, Boulder, CO

- Taught Calculus 1a/1b with Algebra, Calculus 1 for Engineers, Calculus 2 for Engineers, Discrete Applied Mathematics, and Discrete Mathematics for Computer Engineers.
- Served as course coordinator. Supervised graduate teaching assistants and undergraduate learning assistants. Prepared exam problems and solutions. Created and maintained course websites. Answered instructor and student questions. Troubleshooted technical issues.
- Prepared department teaching materials used by other faculty members including lecture notes, homework problems, quizzes, supplemental worksheets, and review session problems. Organized a campuswide Integration Bee in 2013.
- Designed and implemented a core mastery grading system for Calculus 1 for Engineers in fall 2018. Created quizzes in WebAssign and supervised testing for 400+ students per week.
- Developed and taught an online summer Calculus 2 course in 2015 and 2016. Recorded 300+ videos.
- Integrated technology into the classroom, including iPad presentation software, the i>clicker response system, and Mathematica demonstrations. Led LaTeX mathematical typesetting workshops for students and faculty.

Assessment Advisor 2016 to present
Department of Applied Mathematics, University of Colorado, Boulder, CO

- Prepared statistical analyses of student performance in APPM courses. Compared course grades to student SAT/ACT scores, ALEKS scores, high school GPA, attendance, and other factors. Created surveys and collected data on student math backgrounds. Examined the correlation between APPM assessment test questions and course grades. Identified at-risk students. Analyzed grade trends for APPM courses. Tracked the progress of APPM students in upper level math and engineering courses. Calculated engineering graduation rates for students in APPM courses. Examined the performance of transfer students in APPM classes.

Math Placement Advisor 2016 to present
University of Colorado, Boulder, CO

- Led the effort to develop and implement a new math placement process for CU Boulder students in fall 2018. Devised a new math placement formula combining high school GPA, SAT/ACT scores, and online test scores. Created an online placement test in Canvas LMS and wrote 200+ test questions. Generated math placements for thousands of incoming students. Fielded inquiries from students and advisors about the math placement process.
- Created and administered on-campus math placement tests and analyzed the results. Coordinated with Arts and Sciences, Office of Data Analytics, New Student Welcome, and Testing Services. Advised students on appropriate math course selection.

OUTREACH ACTIVITIES

Founder and Director 2005 to present
Colorado Math Circle, Boulder, CO

- The Colorado Math Circle hosts guest lectures and problem solving sessions at CU Boulder throughout the year for talented high school and middle school students, attracting students from around the state. Alumni have received national honors including the National Science Foundation Graduate Research Fellowship, Barry M. Goldwater Scholarship, and Rhodes Scholarship.
- Coach of the 30+ member Colorado ARML Team which represents the state at the American Regions Mathematics League competition in Las Vegas annually.
- Developed and taught weeklong intensive summer programs, including the Sophie Math Workshops for girls and the Lambda Workshop for computer programming.
- Recipient of grants from the CU Boulder Outreach Committee, Mathematical Association of America Rocky Mountain Section, and Mathematical Sciences Research Institute (MSRI).

Co-Editor-in-Chief and Panelist 2016 to present
American Mathematics Competitions (AMC) 8

- Will oversee the creation of this national math competition which attracts 100,000 middle school participants annually, beginning in summer 2019.

Faculty Member 2009–2014, 2016–2017
MathPath

- Taught weeklong intensive summer math and computer programming courses to gifted middle school students.

Other Volunteer Outreach Activities

- Member of the Colorado Mathematics Awards Steering Committee, 2007 to present.
- Volunteer for the MathCounts Competition, 2011 to present. Scoring Coordinator for the Boulder Chapter and Colorado Competitions.
- Advisor for the Fairview High School Math Club, 2005–2011.
- Coach of the Summit Middle School MathCounts Team, 2005–2010.

OTHER WORK EXPERIENCE

Website Developer 2004–2007
Boulder, CO
- Designed and created websites for schools and other organizations.

Business Operations Manager 2003–2004
The Tea Spot, Boulder, CO
- Managed the financial operations of a retail tea shop.

Software Engineer 2002–2003
Massively Parallel Technologies, Louisville, CO
- Developed parallel processing programs for object recognition, linear equation solvers, and other applications.

Senior Programmer 1986–1988
Scientific Computing Associates, New Haven, CT
- Collaborated with Yale University professors to design and implement *CLAM*, a programming environment for scientific computation.

Honors and Awards

National Society of Professional Engineers Colorado (NSPE-CO) *Educator of the Year* 2014

Nominated for the CU Boulder *ASSETT Award for Outstanding Teacher for Technology in Teaching* 2013

Nominated for the CU Boulder *John and Mercedes Peebles Innovation in Education Award* 2010

Presentations

Core Mastery Grading in APPM 1350 Calculus 1, University of Colorado Engineering Council, Boulder, CO, January 2019.

Core Mastery Grading in APPM 1350 Calculus 1, Discipline-Based STEM Education Research (DBER) Seminar, University of Colorado, Boulder, November 2018.

Technology in the STEM Classroom, Graduate Teacher Program (GTP) Workshop, University of Colorado, Boulder, August 2018.

How do APPM students perform in subsequent engineering courses?, Applied Math Engineering Partnership Committee, University of Colorado, Boulder, July 2017.

Improving the Applied Math Assessment Exam Through Item Analysis with Anne Dougherty, 7th Annual Symposium on STEM Education Poster Session, University of Colorado, Boulder, September 2015.

Placement and Assessment are Key with Anne Dougherty, 6th Annual Symposium on STEM Education Poster Session, University of Colorado, Boulder, September 2014.

Mathematical Origami, Pikes Peak Teachers Math Circle, University of Colorado, Colorado Springs, CO, September 2011.

Mathematical Origami, Circle on the Road Workshop, Mathematical Sciences Research Institute (MSRI), Houston, TX, March 2011.

Colorado Math Circle: The First Five Years, Mathematical Association of America, Rocky Mountain Section Meeting, Boulder, CO, February 2011.

Sophie Math: A Math Circle Program for Girls, Joint Mathematics Meetings, New Orleans, LA, January 2011.

Publications

Chang, S., Abrams, G., White, D., and Craviotto, C. Math Circles Flourish throughout the Front Range, *The Colorado Mathematics Teacher*, Spring 2012.

Gelernter, D., Carriero, N., Chandran, S., and Chang, S. Parallel programming in Linda. *International Conference on Parallel Processing*, August 1985, 255-263.