

## Curriculum Vitæ

for

### Helmut Knaust

Associate Professor

Department of Mathematical Sciences

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## 1 Education

**1983–1989** The University of Texas at Austin. Studies in Mathematics.

Degree: Ph.D., Mathematics, Spring 1989. Advisor: Haskell P. Rosenthal (retired).

**1977–1983** Rheinische Friedrich-Wilhelms Universität, Bonn, Germany. Studies in Mathematics, Economics and Educational Sciences.

Degree: Diplom-Mathematiker, Spring 1983. Advisor: Hermann König (retired)

**1974–1977** Universität Bielefeld, Germany. Studies in Mathematics and Economics.

## 2 Academic Appointments

**1997–present** Associate Professor at The University of Texas at El Paso.

**1991–1997** Assistant Professor at The University of Texas at El Paso.

**1989–1991** Visiting Assistant Professor at Oklahoma State University, Stillwater, OK.

**1983–1989** Teaching Assistant, Assistant Instructor and Research Assistant at The University of Texas at Austin.

## 3 Administrative Appointments

**2003–2008** Department Chair, Department of Mathematical Sciences, The University of Texas at El Paso.

**2001–2003** Associate Dean, Colleges of Science and Engineering, The University of Texas at El Paso.

**2001–2003** Director of *CircLES*, the Entering Students Program for Science, Engineering and Mathematics, The University of Texas at El Paso.

## 4 Honors

**2015** *Undergraduate Student Choice Award for Outstanding Teaching*, College of Science, The University of Texas at El Paso.

**2015** *Star on the Mountain Award*, City of El Paso.

**2015** *Regents' Outstanding Teaching Award*, The University of Texas System.

**2012–2015** *CETaL Fellow*, The Center for Excellence in Teaching and Learning, The University of Texas at El Paso.

**2012** *Millionaire Research Award*, Office of Research and Sponsored Projects, The University of Texas at El Paso.

**2011** *Outstanding Performance in Securing Extramural Funding*, Office of Research and Sponsored Projects, The University of Texas at El Paso.

**2004** *Jack R. Bristol Teaching Award*, College of Science, The University of Texas at El Paso.

**2003** *Project Kaleidoscope Faculty 21*, Class of 2003.

**1975–1980** *Studienstiftung des Deutschen Volkes*, Scholarship.

## 5 Teaching Experience

(\* taught in the last three years)

### Graduate Courses in Mathematics:

**1–2** Applied Mathematics [Discrete Wavelets and Applications\*\*; Theory of Ordinary Differential Equations]

**3** Principles of Analysis\*

**4** Real Variables

**5** Technology in the Mathematics Classroom

**6–9** Seminar [Logic and Proof; Topics in Advanced Calculus\*\*; Calculus and Analysis; Number Theory and Algebra]

**10** Graduate Seminar [Numbers]

### Undergraduate Courses in Mathematics:

**11** Precalculus

**12–13** Mathematics for Social Sciences I, II

**14–16** Calculus I, II\*, III

**17** Linear Algebra and Differential Equations

**18** Differential Equations\*\*

**19** Matrix Algebra

**20–21** Applied Analysis I\*\*, II

**22** Introduction to Higher Mathematics\*

**23** Principles of Mathematics\*\*\*

**24** Introduction to Analysis

**25** Fundamental Mathematics from an Advanced Standpoint\*

**26** Real Analysis\*

### Other Graduate Courses:

**27** *LSAMP Bridge to the Doctorate Seminar*\*

### Other Undergraduate Courses:

**28–29** Seminar in Critical Inquiry [Scientific Revolutions; Boolean Algebras]

**30** Introduction to Science and Engineering

**31** Science Seminar (Coordinator)

## 6 Work with Students

### Ph.D. Thesis Committee Membership:

**2015** Grace Babarinsa (Teaching, Learning, and Culture)

**2014** Cesar R. Garcia (Electrical & Computer Engineering)

**2007** Hector Ochoa (Electrical & Computer Engineering)

### Master Thesis Supervised:

**2012** Adrian Delgado (M.S. Mathematics).

Currently Full-time Instructor at Doña Ana Community College, Las Cruces, NM.

### **Master Thesis Committee Membership:**

**1994–2016** *Master of Arts in Teaching Mathematics* Thesis Committee Member for five students.

**1998–2016** *Master of Science* Thesis Committee Member for 11 students.

### **Graduate Research:**

**2016** Agamyrat Altıyev. “Homework In a High School Geometry Classroom: Paper-Based vs. Web-Based.” Graduate Research Project.

### **Undergraduate Research:**

**2013** Brenda Gonzalez, Ariel Gonzalez-Guevara, Melissa Martinez, Aaron Ortega, Jasmine Puento. “[Applications of Discrete Wavelet Transformations.](#)” Students funded by the National Research Experience for Undergraduates Program (NREUP) of the Mathematical Association of America. June 10–July 19, 2013.

## **7 Grants, Fellowships and Awards**

### **Active Grants:**

**2018–2023** *National Science Foundation*, Co-PI, “*Louis Stokes STEM Pathways and Research Alliance: University of Texas System LSAMP.*” ([HRD-1826745](#)). With B. Flores (PI), K. Gosselink (until 2018), W. Robertson, and C. Villalobos. Funded in the amount of \$4,000,000.

**2018–2020** *National Science Foundation*. Co-PI, “*LSAMP Bridge to the Doctorate: University of Texas at El Paso - UT System LSAMP.*” ([HRD-1810898](#)). With B. Flores (PI), K. Gosselink (PI until 2018), and H. Taboada. Funded in the amount of \$1,075,000.

### **Recent Grant Applications:**

**2016** *Department of Education*, PI (UTEP). “*MSEIP: Cooperative Project (EPCC/UTEP): An integrated approach to facilitate the transition of STEM students from College to University.*” With A. Macedo (PI, EPCC), E. Schwab, and G. Schwab. Total funding requested in the amount of \$702,052. Not funded.

### **Previous Grants:**

**2012–2018** *National Science Foundation*, Co-PI. “*UT System Louis Stokes Alliance for Minority Participation: A Senior Model Alliance Focused on Student Success.*” ([HRD-1202008](#)). With B. Flores (PI), Ph. Cohen (until 2015), and C. Villalobos. Funded in the amount of \$4,000,000.

**2015–2016** *Texas Education Agency*, Senior Personnel. “*Professional Development Partnership: Pathway to Calculus.*” With M.A. Tchoshanov, and K. Huereca (El Paso Independent School District). Funded at El Paso Independent School District in the amount of \$135,000.

**2013–2016** *National Science Foundation*, Director and Co-PI. “*UT Alliance Bridge to the Doctorate Program (Cohort 2013–2015).*” ([HRD-1301858](#)). With B. Flores (PI). Funded in the amount of \$987,000.

**2011–2014** *National Science Foundation*, Co-PI. “*UT Alliance Bridge to the Doctorate Program (Cohort 2011–2013).*” ([HRD-1139929](#)). With B. Flores (PI), and P. Nava. Funded in the amount of \$984,850.

**2013** *Mathematical Association of America, National Research Experience for Undergraduates Program*, PI. “*Applications of Discrete Wavelet Transformations.*” Funded in the amount of \$27,394.

- 2010–2013** *National Science Foundation*, Co-PI. “*UT System Alliance: Bridge to the Doctorate Cohort VIII.*” (HRD-1026806). With B. Flores (PI), T. Aktosun, and Ph. Cohen. Funded in the amount of \$987,000.
- 2007–2013** *National Science Foundation*, Co-PI. “*An Integrative Science Success, Teaching and Retention Program.*” (DUE-0653270). With J. Becvar (PI), B. Flores (PI until 2010), J. Lopez, and J. Tinajero. Funded in the amount of \$1,964,912.
- 2007–2013** *National Science Foundation*, Co-PI. “*UT System LSAMP Phase IV.*” (HRD-0703584). With B. Flores (PI). Funded in the amount of \$4,991,436.
- 2009–2011** *National Science Foundation*, Director and Co-PI. “*UT Alliance Bridge to the Doctorate Proposal - Cohort VI.*” (HRD-0929727). With B. Flores (PI). Funded in the amount of \$987,000.
- 2008–2011** *US Department of Education*, APD, “*MSEIP: Cross-Institutional Implementation of Supplemental Instruction.*” (P120A080007). With G. Schwab (PD), P. Mitchell, J. Peeples, and E. Schwab. Funded in the amount of \$599,456.
- 2008–2010** *National Science Foundation*, Co-PI. “*UT Alliance Bridge to the Doctorate Proposal: Cohort V.*” (HRD-0832951). With B. Flores (PI). Funded in the amount of \$987,000.
- 2005–2009** *US Department of Education*, APD, “*MSEIP: Modular Delivery and Supplemental Instruction for the Calculus course taken by all STEM majors.*” (P120A050046). With E. Schwab (PD) and N. Marcus, funded in the amount of \$299,783.
- 2005–2008** *National Science Foundation*, Co-PI. “*The University of Texas System Louis Stokes Alliance for Minority Participation.*” (HRD-0217691). With B. Flores (PI), and P. Arenaz, funded in the amount of \$5,393,432.
- 2005–2007** *National Science Foundation*, Co-PI. “*Sustainability of best practices for minority STEM student retention and success.*” (EEC-0342041). With B. Flores (PI), Th. Brady, and R. Osegueda, funded in the amount of \$2,500,000.
- 2003–2007** *National Science Foundation*, Co-PI. “*Scholars for the Technical Workforce of the Future Program.*” (DUE-0324209). With R. Gutierrez (PI), and R. Osegueda, funded in the amount of \$400,000.
- 2004–2005** *Educational Advancement Foundation*, Mini-grant. “*Course development for the Introductory Analysis course.*” Funded in the amount of \$2,000.
- 2000** *Challenge 98*, The University of Texas at El Paso. “*Use of Technology in Calculus II.*” Funded in the amount of about \$5,300.
- 1997–1998** *A Model Institution for Excellence*, The University of Texas at El Paso. “*S.O.S. Mathematics.*” With M.A. Khamsi and N. Marcus, funded in the amount of about \$100,000.
- 1996–1997** *A Model Institution for Excellence*, The University of Texas at El Paso. “*Reforming the Differential Equations Course.*” With M.A. Khamsi, funded in the amount of about \$45,000.
- 1996–1997** *A Model Institution for Excellence*, The University of Texas at El Paso. “*S.O.S. Mathematics.*” With A. Duval, M.A. Khamsi and N. Marcus, funded in the amount of about \$140,000.
- 1994–1995** *Teaching Effectiveness Grant*, The University of Texas at El Paso. “*Computer-assisted Classroom Instruction in Upper-division Mathematics Courses.*” Funded in the amount of \$4,400.
- 1990** *National Science Foundation*, Young Investigator. “*Workshop in Linear Analysis and Probability.*”(MCS DMS-8921369). Funded in the amount of \$8,260.

## 8 Publications

### Refereed Articles:

- 1 Ariana Arciero-Pino and Helmut Knaust. *Bridge to the Doctorate Seminar Series: Coaching the Next Generation of STEM Professionals*. *The Chronicle of Mentoring & Coaching* 2 (2018), 207–11.

- 2 Ariana Arciero-Pino, Benjamin Flores, Lynda Gonzales, Helmut Knaust, and Maricel Quintana-Baker. *Work in Progress: Qualitative Assessment of the UT System LSAMP Summer Research Academy Abroad: An International Experience in Research and Culture*. Proceedings of the 45th ASEE/IEEE Frontiers in Education Conference, 2015.
- 3 Darnell, A., Becvar, J., Flores, B., Knaust, H., Lopez, J. & Tinajero, J. *Achieving student success using Peer-Led Team Learning (PLTL)*. Conference Proceedings of the Peer-Led Team Learning International Society, 2013.
- 4 Ariana Arciero-Pino, Benjamin Flores, and Helmut Knaust. *Work in Progress - The University of Texas System Louis Stokes Alliance for Minority Participation: A State-wide Initiative to Promote STEM Undergraduate Research*. Proceedings of the 42nd ASEE/IEEE Frontiers in Education Conference, 2012.
- 5 Tuncay Aktosun, Ariana Arciero, Benjamin Flores, Helmut Knaust, and Cristina Villalobos. *Work in Progress - The Bridge to the Doctorate Experience: A Reflection on Best Practices and Project Outcomes*. Proceedings of the 41st ASEE/IEEE Frontiers in Education Conference, 2011.
- 6 Ariana Arciero, Benjamin Flores, and Helmut Knaust. *Work in Progress - International Conference Participation for Undergraduate Scholars through the University of Texas System Louis Stokes Alliance for Minority Participation*. Proceedings of the 40th ASEE/IEEE Frontiers in Education Conference, 2010.
- 7 Benjamin Flores, James Becvar, Ann Darnell, Helmut Knaust, Jorge Lopez and Josefina Tinajero. *Implementing Peer Led Team Learning in Gateway Science and Mathematics Courses for Engineering Majors*. Proceedings of the 2010 American Society for Engineering Education Annual Conference and Exposition, 2010.
- 8 Helmut Knaust. *Analysis on the Real Line*. Accepted for publication in the "Journal of Inquiry-Based Learning in Mathematics" (September 2009).
- 9 Connie Kubo Della-Piana, Ann Darnell, Julia Bader, Lilly Romo, Nohemi Rubio, Benjamin Flores, Helmut Knaust, Thomas Brady, and Andrew Swift. *A Longitudinal Study of Student Persistence in Science, Technology, Engineering, and Mathematics (STEM) at a Regional Urban University*. Proceedings of the 2003 American Society for Engineering Education Annual Conference and Exposition, 2003.
- 10 Benjamin C. Flores, Jana Renner Martínez, Helmut Knaust, Ann Darnell, Lilly Romo and Connie Kubo Della-Piana. *The Effectiveness of a Mathematics Review for Student Placement into College-Level Mathematics*. Proceedings of the 2003 American Society for Engineering Education Annual Conference and Exposition, 2003.
- 11 Lourdes Sánchez-Contreras, Rosa M. Gómez, Joseph Ramos, Benjamin C. Flores and Helmut Knaust. *Developing a learner centered environment to meet the needs of a growing urban commuter student population*. Proceedings of the 2003 American Society for Engineering Education Annual Conference and Exposition, 2003.
- 12 Benjamin C. Flores, Connie Kubo Della-Piana, Thomas Brady, Andrew Swift, Helmut Knaust and Jana Renner Martínez. *An Institutional Model for Student and Faculty Support*. Proceedings of the 2002 American Society for Engineering Education Annual Conference and Exposition, 2002.
- 13 M.A. Khamsi, H. Knaust, N.T. Nguyen and M.D. O'Neill. *Lambda-Hyperconvexity in Metric Spaces*. Nonlinear Analysis 43 (2001), 21-31.
- 14 H. Knaust, E. Odell and Th. Schlumprecht. *On Asymptotic Structure, the Szlenk Index and UKK Properties in Banach Spaces*. Positivity 3 (1999), 173-199.
- 15 Helmut Knaust. *Some isomorphic preduals of  $\ell_1$  which are isomorphic to  $c_0$* . Rocky Mountains Journal of Mathematics 27 (1997), 181-186.

- 16 H. Knaust. *Angelic spaces with the Ramsey property*. pp. 267–273, in: “Interaction Between Functional Analysis, Harmonic Analysis and Probability, Proceedings,” N. Kalton, E. Saab, S. Montgomery-Smith (eds.), Marcel Dekker, New York, 1995.
- 17 Helmut Knaust. *p-Hilbertian subsequences in  $\ell_1(X)$* . Contemporary Mathematics 144 (1993), 159–163.
- 18 Helmut Knaust. *Orlicz sequence spaces of Banach-Saks type*. Archiv der Mathematik 59 (1992), 562–565.
- 19 Helmut Knaust. *Array convergence of functions of the first Baire-class*. Proceedings of the American Mathematical Society 112 (1991), 529–532.
- 20 Helmut Knaust and Edward Odell. *Weakly null sequences with upper  $\ell_p$ -estimates*. pp. 85–107, in: “Functional Analysis, Proceedings, The University of Texas at Austin, 1987–89,” E. Odell, H. Rosenthal (eds.), Lecture Notes in Mathematics 1470, Springer-Verlag, Berlin, 1991.
- 21 H. Knaust and E. Odell. *On  $c_0$  Sequences in Banach Spaces*. Israel Journal of Mathematics 67 (1989), 153–169.

#### Reviewed Articles:

- 22 M.A. Khamsi, H. Knaust and N. Marcus. *S.O.S. Mathematics—Students Review Mathematical Concepts on the Internet*. In: “Proceedings of the Eleventh Annual International Conference on Technology in Collegiate Mathematics,” Addison-Wesley-Longman, 1999.

#### Wolfram Demonstration Projects:

- 23 Helmut Knaust. *Congruence Classes of Geoboard Triangles*. March 2016.
- 24 Helmut Knaust. *Dyadic Cascade Algorithm for Daubechies Wavelets*. March 2015.
- 25 Helmut Knaust. *The Discrete Cascade Algorithm*. January 2015.
- 26 Helmut Knaust. *Kiesswetter’s Function*. June 2014.
- 27 Helmut Knaust. *Parliamentary Seat Allocation by the Sainte-Laguë Method*. June 2014.
- 28 Helmut Knaust. *Nullcline Plot*. December 2013; updated February 2016.
- 29 Helmut Knaust. *Bungee Jumping*. October 2013.
- 30 Helmut Knaust. *Body-Mass Index*. April 2013.
- 31 Helmut Knaust. *Flight of a Glider*. January 2013.

#### Technical Reports:

- 32 Helmut Knaust. *Isometries of the Complex Plane*. March 2013.
- 33 Helmut Knaust. *Boolean Algebra Theorem Sequence*. January 2013.
- 34 Helmut Knaust. *Multi-Resolution Analysis for the Haar Wavelet*. March 2009.
- 35 David Carrejo, Hamide Dunlap-Dogan, Art Duval, Helmut Knaust, Olga Kosheleva, Lawrence Lesser, Lucy Michal, Ori Rosen, Emil Schwab, Daniela Szatmari-Voicu, Mourat Tchoshanov, Matthew Winsor, and Piotr Wojciechowski. *Practice Exam Questions for the Texas Examinations of Educator Standards [115 Mathematics 4–8]*. March 2006.

## 9 Consulting

- 2014 Universidad Católica del Norte, Antofagasta, Chile. Consulting visit.
- 2009–2011 Universidad del Bío-Bío, Concepción, Chile. [Student success consulting](#). (With B. Flores and S. Rodriguez.)

- 2009** Department of Mathematics and Statistics, Texas A&M University - Corpus Christi. External Evaluator.
- 2008** Universidad Católica de Temuco, Temuco, Chile. Consulting visit. (With B. Flores.)
- 2006** *A Model Institution for Excellence* Dissemination Workshop: Pathways to Success in STEM Education, The University of Texas at El Paso. Facilitator.
- 2005** Faculty Development Workshop, School of Science and Technology, Norfolk State University, Norfolk VA. (With B. Flores and J. Ramos.)
- 1994–present** Book and software reviews for *Cengage Learning*, *Harcourt, Brace & Co.*, *McGraw-Hill* and *John Wiley & Sons, Inc.*

## 10 Professional Societies

- 2011–present** *Academy of Inquiry-Based Learning*, Member.
- 1997–present** *Mathematical Association of America*, Member.
- 1983–2016** *American Mathematical Society*, Member.
- 2014–2015** *Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS)*, Member.
- 2012–2013** *American Society for Engineering Education*, Member.
- 2004–2013** *Greater El Paso Council of Teachers of Mathematics*, Member.

## 11 Research-related Activities

### Talks:

- 1998** The University of Texas at El Paso, Research Seminar. “*Lambda-Hyperconvexity in Metric Spaces.*”
- 1994** New Mexico State University, Las Cruces, Colloquium. “*Infinite Ramsey theory and its applications in Banach space theory.*”
- 1994** The University of Missouri at Columbia, Conference: The Interaction Between Functional Analysis, Harmonic Analysis and Probability. “*The Ramsey property in angelic spaces.*”
- 1993** The University of Texas at El Paso, Research Seminar. “*Angelic spaces with the Ramsey property.*”
- 1992** The University of Texas at El Paso, Research Seminar. “*Array convergence in angelic spaces.*”
- 1991** The University of Texas at El Paso, Research Seminar. “*The unconditional basic sequence problem à la Gowers.*”
- 1991** The University of Texas at El Paso, Colloquium. “*Applications of Ramsey theory to Banach space geometry.*”
- 1989** The University of Missouri at Columbia, Colloquium. “*Uniform structures in infinite-dimensional Banach space theory.*”

### Workshop Participation:

- 1996** *Special Concentration Week on “Infinite Dimensional Convex Geometry.”* Mathematical Sciences Research Institute, Berkeley, CA.
- 1992** *International Research Workshop on Banach Space Theory.* Universidad de los Andes, Mérida, Venezuela.
- 1988** *Microprogram on the Structure of Banach spaces.* Mathematical Sciences Research Institute, Berkeley, CA.

### Conference Participation:

- 2017** *Joint Meeting of the American Mathematical Society-Mathematical Association of America.* Atlanta, GA.
- 2009** *Joint Meeting of the American Mathematical Society-Mathematical Association of America.* Washington, DC.
- 2006** *Joint Meeting of the American Mathematical Society-Mathematical Association of America.* San Antonio, TX.
- 1997** *Joint Meeting of the American Mathematical Society-Mathematical Association of America.* San Diego, CA.
- 1995** *Joint Meeting of the American Mathematical Society-Mathematical Association of America.* San Francisco, CA.
- 1994** *The Interaction between Functional Analysis, Harmonic Analysis and Probability.* University of Missouri, Columbia, MO.
- 1990** *Regional Conference of the American Mathematical Society.* University of North Texas, Denton, TX.
- 1988** *Banach Spaces and the Geometry of Convex Bodies.* University of Alberta, Banff, Canada.
- 1985** *Conference on Banach Spaces and Classical Analysis.* Kent State University, Kent, OH.

## 12 Teaching-related Activities

### Talks:

- 2019** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Baltimore, MD. Contributed Talk, MAA Session on “Mathematical Themes in a First-Year Seminar.” [“Scientific Revolutions—A First Year Seminar Course Design.”](#)
- 2018** Joint Meeting of the American Mathematical Society-Mathematical Association of America, San Diego, CA. Contributed Talk, MAA Session on Integrating Research into the Undergraduate Classroom. [“Guided Inquiry for Undergraduates in a Classroom Setting.”](#)
- 2016** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Seattle, WA. MAA Poster Session on “Me and My Gadgets—Teaching with Technology.” [“Wolfram Demonstrations for Differential Equations.”](#)
- 2015** Joint Meeting of the American Mathematical Society-Mathematical Association of America, San Antonio, TX. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. [“Multi-Resolution Analysis for the Haar Wavelet: A Minimalist Approach.”](#)
- 2015** Joint Meeting of the American Mathematical Society-Mathematical Association of America, San Antonio, TX. Contributed Talk, MAA Session on Inquiry-Based Learning in First-Year and Second-Year Courses. [“Exploration and Inquiry in an Introductory Course for Mathematics Majors.”](#)
- 2014** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Baltimore, MD. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. [“Image Fusion of Satellite Images.”](#) (With B. Gonzalez\* and J. Puente.\*)
- 2013** MathFest of the Mathematical Association of America, Hartford, CT. Contributed Talk. [“Technology in the Mathematics Classroom.”](#)
- 2013** SUN Conference on Teaching and Learning, The University of Texas at El Paso, El Paso, TX. Contributed Talk. [“How to Make Teachers out of Mathematics Students.”](#)

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\*Student presenters



- 2013** Joint Meeting of the American Mathematical Society-Mathematical Association of America, San Diego, CA. Contributed Talk, MAA Session on Bridging the Gap: Designing an Introduction to Proofs Course. *“A Plaidoyer for Boolean Algebra.”*
- 2012** Meeting of the Southwestern Section of the Mathematical Association of America, Pima Community College, Tucson, AZ. Contributed Talk. *“Compression algorithms for digital images.”* (With A. Delgado.\*)
- 2012** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Boston, MA. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. *“Smoke Detection in Stationary Video Using Wavelets.”*
- 2012** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Boston, MA. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. *“Undergraduate Research Projects on Wavelet-Based Time Series Forecasting.”* (With B. Atwood, C. Haddad, and J. Merkel.)
- 2011** MathFest of the Mathematical Association of America, Lexington, KY. Contributed Talk, Session on First Year Seminar/First Year Experience Mathematics Courses. *“Two First Year Seminar Course Designs for Science and Mathematics Majors.”*
- 2011** Meeting of the Southwestern Section of the Mathematical Association of America, Eastern New Mexico University, Roswell, NM. Contributed Talk. *“A Capstone Course for Future High School Mathematics Teachers.”*
- 2011** Joint Meeting of the American Mathematical Society-Mathematical Association of America, New Orleans, LA. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. *“Lloyd-Max Quantization Schemes.”*
- 2010** Meeting of the Southwestern Section of the Mathematical Association of America, Scottsdale Community College, Scottsdale, AZ. Contributed Talk. *“Teaching a Discrete Wavelet Transformations Course.”*
- 2010** Joint Meeting of the American Mathematical Society-Mathematical Association of America, San Francisco, CA. Contributed Talk, MAA Session on Wavelets in Undergraduate Education. *“A Module for the Construction of Scaling Functions using the Cascade Algorithm.”* (With J. Rock, D. Ruch, K. Hoover, and R. Zarnowski.)
- 2009** MathFest of the Mathematical Association of America, Portland, OR. Contributed Talk, Session on the Effective Use of Dynamic Mathematical Software in the Classroom. *“Exploring Machin’s Approximation of  $\pi$ .”*
- 2009** “Wavelets and Applications: A Multi-Disciplinary Undergraduate Course with an Emphasis on Scientific Computing,” University of South Florida, Tampa, FL. Invited Presenter. *“Student Projects in a Discrete Wavelets Transform Course.”*
- 2009** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Washington, DC. Contributed Talk, MAA Session on Wavelets for Undergraduates. *“Zooming in on a Transformed Image: a Project for Students.”* (With C. Haddad and D. Haile.)
- 2008** Fall Conference of the Greater El Paso Council of Teachers of Mathematics, El Paso, TX. Contributed Talk. *“Math in the News: Perfect Numbers and Mersenne Primes.”*
- 2007** Fall Conference of the Greater El Paso Council of Teachers of Mathematics, El Paso, TX. Contributed Talk. *“S.O.S. Mathematics and Some Other Math Help Sites on the Internet.”*
- 2005** Teaching and Learning Seminar, The University of Texas at El Paso. *“The Moore Method.”*
- 2004** SUN Conference on Teaching and Learning, The University of Texas at El Paso, Contributed Talk. *“Mathematics as an Experimental Laboratory Science.”* (With A. Duval.)

- 2003** Meeting of the Southwestern Section of the Mathematical Association of America, New Mexico Institute of Mining and Technology, Socorro, NM. Contributed Talk. *“That Student Is Taught the Best Who Is Told the Least.”*
- 2003** International Network of Education Technology Conference 2003, The University of Texas at El Paso. Contributed Talk. *“Teaching Algebra with Spreadsheets.”*
- 2002** Conference for the Advancement of Science Teaching 2002, The University of Texas at El Paso. Contributed Talk. *“S.O.S Mathematics: Helping Math Students On the Internet.”* (With M.A. Khamsi and N. Marcus.)
- 2002** Fifteenth International Conference on Technology in Collegiate Mathematics, Orlando, FL, Contributed Talk. *“S.O.S Mathematics—Helping Math Students Through the Internet.”* (With M.A. Khamsi and N. Marcus.)
- 2002** SUN Conference on Teaching and Learning, The University of Texas at El Paso. Contributed Talk. *“The Moore Method—A Tradition of Active Student Learning in Mathematics.”* (With A. Duval.)
- 2002** International Network of Education Technology Conference 2002, The University of Texas at El Paso. Contributed Talk. *“S.O.S Mathematics—A Mathematics Help Site on the Internet.”* (With N. Marcus.)
- 1999** The University of Texas at El Paso. Talk for Club Zero. *“The Hunt for Mersenne Primes.”*
- 1998** Eleventh International Conference on Technology in Collegiate Mathematics, New Orleans, LA. Contributed Talk. *“S.O.S. Mathematics—Students Review Mathematical Concepts on the Internet.”*
- 1998** Neat Networks Conference, The University of Texas at El Paso. Contributed Talk. *“S.O.S. Mathematics.”* (With M.A. Khamsi.)
- 1997** The University of Texas at El Paso, Talk for Club Zero. *“The CORDIC Algorithm.”*
- 1997** The University of Texas at El Paso, Colloquium. *“Differential Equations Reform.”* (With M.A. Khamsi.)
- 1997** Meeting of the Southwestern Section of the Mathematical Association of America, New Mexico State University, Grants, NM. Contributed Talk. *“How Do Calculators Calculate?”*
- 1996** Universidad Autónoma de Ciudad Juárez, Ciudad Juárez, Mexico. Student Colloquium for *Proyecto Abel*. *“Combinatorics in Geometry and Analysis.”*
- 1995** The University of Texas at El Paso. Talk for *Club Zero*. *“An Introduction to Ramsey Theory.”*
- 1995** Universidad Autónoma de Ciudad Juárez, Ciudad Juárez, Mexico. Student Colloquium for *Proyecto Abel*. *“Measure Theory: From Archimedes to Lebesgue.”*

### **Workshop Participation:**

- 2015** *Building Community in SIMIODE (Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations)*, directed by B. Winkel, J. Libertini and K. Bliss. Helena, MT.
- 2008–2011** *Discrete Wavelets Transform Workshop*, directed by C. Bénéteau, C. Haddad, D. Ruch and P. Van Fleet. Madison, WI, Portland, OR, Pittsburgh, PA, and Minneapolis, MN.
- 2008** *“Inquiry-Based Learning with a Focus on Number Theory: a Transitions-to-Proof Course,”* directed by M. Starbird, E. Odell, D. Marshall and S. Nichols. University of Texas at Austin, Austin, TX.
- 2007** *“Wavelets and Applications: A Multi-Disciplinary Undergraduate Course with an Emphasis on Scientific Computing,”* directed by P. Van Fleet. University of St. Thomas, St. Paul, MN.
- 2006** Inquiry-Based Learning Workshop, directed by S. Yoshinobu. Costa Mesa, CA.
- 1997** Advanced Cooperative Learning Workshop, directed by K. Smith. Cloudcroft, NM.
- 1997** Cooperative Learning Workshop, directed by E.J. Holubec. Cloudcroft, NM.
- 1996** NSF Faculty Enhancement Workshop *“Teaching Differential Equations Using a Dynamical Systems Perspective,”* directed by P. Blanchard and R. Delaney. Oberlin College, OH.

### **Other Conference Participation:**

- 2013** Meeting of the Southwestern Section of the Mathematical Association of America. New Mexico Institute of Mining and Technology, Socorro, NM.
- 2008** MathFest of the Mathematical Association of America, Madison, WI.
- 2005** Meeting of the Southwestern Section of the Mathematical Association of America. The University of Texas at El Paso.
- 2003–2008, 2010–2015, 2018** Annual “Legacy of R.L. Moore” Conferences. Austin, TX, Washington, DC, and Denver, CO. Invited Participant.
- 2001** Meeting of the Southwestern Section of the Mathematical Association of America. New Mexico State University, Las Cruces, NM.
- 1996–1997** International Conference on Technology in Collegiate Mathematics. Reno, NV, and Chicago, IL.
- 1995** Meeting of the Southwestern Section of the Mathematical Association of America. The University of Texas at El Paso.

### **Outreach Activities:**

- 1998–present** Co-owner of *Math Medics, LLC*, publisher of “*S.O.S. Mathematics*”. (With M.A. Khamsi and N. Marcus.)
- 1996–present** Co-developer of the Internet site “*S.O.S. Mathematics*”. (With M.A. Khamsi and N. Marcus.)

## **13 Service-related Activities**

### **Conference Session Organized:**

- 2015** Louis Stokes Midwest Center of Excellence, Indianapolis, IA. “*Bridge to the Doctorate Alumni: How Can They Take LSAMP to the Next Level?*” Workshop. (With B. Flores and A. Arciero-Pino.)
- 2010** MathFest of the Mathematical Association of America, Pittsburgh, PA. “*Active Learning Intervention Strategies Accompanying Introductory Mathematics Courses.*” Contributed Paper Session. (With C. Bénéteau, E. Schwab and G. Schwab.)

### **Talks:**

- 2018** Annual Mentoring Conference, University of New Mexico, Albuquerque, NM. Contributed Talk. “*Bridge to the Doctorate Seminar Series: Coaching the Next Generation of STEM Professionals.*” (With A. Arciero-Pino.)
- 2016** Louis Stokes Midwest Center for Excellence Conference, Chicago, IL. Panelist. “*NSF LSAMP Bridge to the Doctorate: Facilitating Graduate Academic Success.*” (With D. Yates and M. Tchounwou.)
- 2015** ASEE/IEEE Frontiers in Education Conference, El Paso, TX. Contributed Talk. “*Qualitative Assessment of the University of Texas System Louis Stokes Alliance for Minority Participation Summer Research Academy Abroad: An International Experience in Research and Culture.*” (With A. Arciero-Pino, B. Flores, L. Gonzales, and M. Quintana-Baker.)
- 2014** Sixth Annual Conference of the Alliance of Hispanic Serving Institution Educators, La Verne, CA. Contributed Talk. “*Management of a Successful Summer Research Academy.*” (With A. Arciero-Pino and B. Flores.)
- 2013** Annual Meeting of the American Association for the Advancement of Science, Boston, MA. Poster presentation. “*Supplemental Instruction for Pre-Calculus.*” (With G. Schwab and E. Schwab.)

- 2012** ASEE/IEEE Frontiers in Education Conference, Seattle, WA. Contributed Talk. “*Work in Progress: The University of Texas System Louis Stokes Alliance for Minority Participation: A State-wide Initiative to Promote STEM Undergraduate Research.*” (With A. Arciero-Pino and B. Flores.)
- 2012** MathFest of the Mathematical Association of America, Madison, WI. Contributed Talk, Session on Instructional Support Roles for Undergraduates in Mathematics and Statistics. “*Peer-Led Team Learning in Precalculus.*”
- 2012** Hawaii University International Conferences: Math, Engineering and Education Conference, Honolulu, HI. Poster presentation. “*Supplemental Instruction for Pre-Calculus. Cross Institutional Implementation.*” (With G. Schwab, E. Schwab, and B. Salazar\*.)
- 2011** ASEE/IEEE Frontiers in Education Conference, Rapid City, SD. Contributed Talk. “*Work in Progress: The Bridge to the Doctorate Experience: A Reflection on Best Practices and Project Outcomes.*” (With T. Aktosun, A. Arciero, B. Flores, and C. Villalobos.)
- 2011** Institutional Service Project Directors Meeting, Department of Education, Washington, DC. Poster presentation. “*Cross Institutional Implementation of Supplemental Instruction.*” (With E. Schwab and G. Schwab.)
- 2011** SUN Conference on Teaching and Learning, El Paso, TX. Contributed Talk. “*Program Assessment? Of course!*” (With Joe A. Guthrie.)
- 2011** Joint Meeting of the American Mathematical Society-Mathematical Association of America, New Orleans, LA. Contributed Talk, MAA Session on Using Program Assessment to Improve Student Learning. “*Course-based Program Assessment.*” (With Joe A. Guthrie.)
- 2010** National Conference on Students in Transition, Houston, TX. Poster presentation. “*How to increase the student success in Precalculus courses.*” (With E. Schwab and G. Schwab.)
- 2010** ASEE/IEEE Frontiers in Education Conference, Washington, DC. Contributed Talk. “*Work in Progress: International Experiences for Undergraduate Scholars through the University of Texas System Louis Stokes Alliance for Minority Participation.*” (With A. Arciero and B. Flores.)
- 2010** MathFest of the Mathematical Association of America, Pittsburgh, PA. Contributed Talk. “*A Supplemental Instruction Model for Precalculus.*” (With E. Schwab and G. Schwab.)
- 2010** ASEE Annual Conference & Exposition, Louisville, KY. Contributed Talk. “*Implementing Peer Led Team Learning in Gateway Science and Mathematics Courses for Engineering Majors.*” (With B. Flores, J. Becvar, A. Darnell, J. Lopez and J. Tinajero.)
- 2010** Meeting of the Southwestern Section of the Mathematical Association of America, Scottsdale Community College, Scottsdale, AZ. Contributed Talk. “*Supplemental Instruction for the Precalculus Course.*” (With G. Schwab and E. Schwab.)
- 2010** Professional Development Session, El Paso Community College, El Paso, TX. “*Implementing Supplemental Instruction in Precalculus Courses at EPCC.*” (With G. Schwab, E. Schwab, A. Bogdan\* and O. Macedo\*.)
- 2009** The University of Texas at San Antonio, San Antonio, TX. Presentation at Luncheon for the Hon. Louis Stokes. “*UT System LSAMP Major Accomplishments.*”
- 2009** MathFest of the Mathematical Association of America, Portland, OR. Contributed Talk. “*Cross-Institutional Implementation of Supplemental Instruction.*” (With G. Schwab and E. Schwab.)
- 2009–2010** External Advisory Board meeting (NSF-STEP grant). The University of Texas at El Paso, El Paso, TX. “*Peer-Led Team Learning for Precalculus.*”
- 2009** SUN Conference on Teaching and Learning, El Paso, TX. Contributed Talk. “*Peer-Led Supplemental Instruction for Calculus.*” (With E. Schwab, O. Macedo\* and M. Pugh\*.)
- 2009** Annual Conference on The First-Year Experience, Orlando, FL. Poster Presentation. “*Modular Delivery and Supplemental Instruction (SI) for the Calculus Course.*” (With E. Schwab, M. Fuentes\* and O. Macedo\*.)

- 2009** Joint Meeting of the American Mathematical Society-Mathematical Association of America, Washington, DC. Contributed Talk, MAA Session on Building Diversity in Advanced Mathematics: Models that Work. *“Modular Delivery and Peer-Led Team-Learning for Precalculus.”* (With E. Schwab.)
- 2007** Parkland High School, Ysleta Independent School District, El Paso, TX. Presentation. *“Getting Ready To Study Mathematics, Science and Engineering at UTEP.”*
- 2006** SUN Conference on Teaching and Learning, El Paso, TX. Contributed Talk. *“How to Increase the Pass Rate in Calculus.”* (With N. Marcus and E. Schwab.)
- 2006** Fall Conference of the Greater El Paso Council of Teachers of Mathematics, El Paso, TX. Contributed Talk. *“Studying Engineering, Mathematics and Science at UTEP.”* (With B. Flores.)
- 2006** The University of Texas at El Paso. *“Math 1319 - Mathematics in the Modern World.”* Workshop Presentation.
- 2005** The University of Texas at El Paso. *“Student Outcomes in Mathematics.”* (With A. Duval.)
- 2004** Annual Conference on The First-Year Experience, Addison, TX. Contributed Talk. *“Getting Ahead in First-Year Mathematics College Courses.”* (With B. Flores, N. Marcus and D. Ward.)
- 2003** Summer Institute of the National Learning Communities Project, Olympia, WA. Contributed Talk. *“CircLES: The Entering Students Program in Science and Engineering.”* (With B. Flores, D. Ward and C. Willermet.)
- 2003** Meeting of the Southwestern Section of the Mathematical Association of America, New Mexico Institute of Mining and Technology, Socorro, NM. Contributed Talk. *“Placing More Freshmen Into College-level Mathematics Courses.”*
- 2002** Conference for the Advancement of Science Teaching 2002, El Paso, TX. Contributed Talk. *“CircLES at UTEP.”* (With S. Chopra, E.L. Dahl, O. Luckett\*, A. Pineda and N. Villa\*.)
- 2002** Southwest Regional Learning Communities Conference, Tempe, AZ. Contributed Talk. *“Learning Communities—It’s a Team Effort: Lessons Learned From Five Perspectives.”* (With T. Brady, C.K. Della-Piana, B. Flores, C. Flores\*, C. Rodriguez\* and A. Swift.)
- 2002** Twenty-First Annual Conference on The First-Year Experience, Orlando, FL. Contributed Talk. *“An Academic Model for SEM Student Success in Urban Commuter Institutions.”* (With C.K. Della-Piana, B. Flores and R. Gómez.)

### **Workshop Participation:**

- 2016** SCK Institute. University of Michigan, Ann Arbor, MI.
- 2010** *Annual Peer-Led Team Learning Leadership Conference and Workshop on Leader Training.* Morehouse College, Atlanta, GA.
- 2010** *Texas STEP Workshop,* directed by J. Kimball. Dallas, TX.
- 2006** PMET Workshop *“Mathematical Preparation of Elementary Teachers,”* directed by J. Evans and B. Madison. El Paso Community College, El Paso, TX.
- 2005** *“Algebra II Scoring Workshop,”* Math and Science Partnership. El Paso, TX.
- 2004** *“Workshop on Mentoring and Nurturing Students,”* American Mathematical Society. Tucson, AZ.
- 2004** *“Leading the Academic Department: A Workshop for Chairs of Mathematical Sciences Departments,”* Mathematical Association of America. Washington, DC.
- 2004** *“Faculty 21 Leadership Institute,”* Project Kaleidoscope. The Baca Campus of the Colorado College, Crestone, CO.
- 2003** *“Ensuring the Success of Under-represented Groups in STEM Learning Environments,”* Project Kaleidoscope Assembly. Rowan University, Glassboro, NJ.
- 2003** Summer Institute, National Learning Communities Project. Evergreen State College, Olympia, WA.

### **Other Conference Participation:**

- 2016** “Louis Stokes Alliances for Minority Participation Research Symposium.” National Harbor, MD.
- 2015** “Convention for Attaining Excellence in Compliance for Research, Ethics, Education and Policy.” El Paso, TX.
- 2014** “Annual Conference of the Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS).” Los Angeles, CA.
- 2013, 2015–2017** “Annual Conference of the Louis Stokes Midwest Center of Excellence.” Indianapolis, IA, and Chicago, IL.
- 2013** “Seventh Annual UTeach Conference,” The University of Texas. Austin, TX.
- 2010** “Second International Conference on Science in Society,” Universidad Carlos III de Madrid, Leganés, Spain.
- 2009, 2011** “World Science Forum.” Budapest, Hungary.
- 2008** “MSEIP Preapplication Workshop,” Department of Education, Dallas, TX.
- 2008–2010** “STEP PI Grantee Meeting,” National Science Foundation. Arlington, VA.
- 2007–2017** University of Texas System Louis Stokes Alliance for Minority Participation Student Research Conference. El Paso, TX, San Antonio, TX, Austin, TX, Arlington, TX, and Odessa, TX.
- 2007–2010, 2012** “Joint Annual Meeting,” National Science Foundation. Washington, DC.
- 2007** “Preparing Mathematics Teachers To Make a Difference: Why Teacher Education Matters,” Policy Forum, The Education Policy Center at Michigan State University. Washington, DC.
- 2005** “A Catalyst for Change” Conference, UT System Louis Stokes Alliance for Minority Participation. Dallas, TX.
- 2005** “Western Regional CSEMS meeting,” National Science Foundation, Oakland, CA.
- 2005** “Math and Science Partnership Learning Network Conference,” National Science Foundation. Washington, DC.
- 2004** “Teachers for a New Era Institute: Engagement of the Arts and Sciences,” Carnegie Corporation of New York. Washington, DC.
- 2002** Engineering and Computing Education Grantees Conference, National Science Foundation. Washington, DC.

### **Other:**

- 2007** Tornillo High School, Tornillo Independent School District, Tornillo, TX. Mathematics Competition Judge.
- 2007** “Math Emporium,” Virginia Polytechnic Institute and State University, Blacksburg VA. Visit. (With S. Aley and C.D. Lujan.)

## **14 Service**

### **University Service:**

- 2012** Graduate School Faculty Marshal of Students, Fall Commencement.
- 2012** Hiring Committee, Professional Development Director for the Graduate School, Member.
- 2006–2007** “UTEP Math Summit,” Member.
- 2006** Hiring Committee, Research Associate for the College Readiness Program, Member.
- 2005** Hiring Committee, Director of Assessment and Testing, Member.
- 2005–2008** University College Curriculum Committee, Member.

**2002–2003, 2005–2008** Developmental Education Committee, Member.  
**2004–2005** *Teachers for a New Era* Core Curriculum/Learning Communities Group, Member.  
**2004–2005** UTEP Centennial Task Force for Student Success, Member;  
 “Leavers” sub-committee, Member.  
**2004–2008** Entering Students Program Advisory Committee, Member.  
**2004–2008** *Border Biomedical Research Center*, Institutional Advisory Board, Internal Member.  
**2004** Core Curriculum Committee, Member.  
**2004** *Texas Success Initiative* Task Force, Member.  
**2002–2004** Learning Communities Advisory Committee, Member.  
**2001–2003** University Calendar Committee, Member.  
**2001–2003** University 1301 Steering Committee, Member; Evaluation sub-committee, Member; Proposal Review sub-committee, Member.  
**1996–1998, 2012–2014** Faculty Senate, Member.  
**1996–1998** *A Model Institution for Excellence* Curriculum Steering Committee, Member; Mathematics Curriculum sub-committee, Member.  
**1995** *A Model Institution for Excellence* Freshmen Seminar Planning Committee, Member.

#### **College Service:**

**2003–2007** CircLES Liaison.  
**2002–2003** CircLES Advisory Committee, Chair.  
**2000** Tenure and Promotion Committee, Member.

#### **Departmental Service:**

**2015–present** Graduate Studies Committee, Member.  
**2012–present** *Master of Arts in Teaching Mathematics* Committee, Member.  
**2008–2015** Program Assessment Committee, Co-chair.  
**2008–2012** *Peer-Led Team Learning (PLTL)* Coordinator for the Precalculus course.  
**2004–2005** Strategic Planning Committee, Chair.  
**2003–2008** Department Chair.  
**2000–2001** Hiring Committee, Chair.  
**1998–2000** Graduate Advisor.  
**1997–2003** Chair’s Advisory Committee, Member.  
**1996–1997** *NASA MU-SPIN* Web Project, Department Faculty Liaison.  
**1995–1998** Graduate Recruiting Committee, Chair.  
**1995–1998, 2000–2002** Teaching Effectiveness Committee, Member.  
**1994** Departmental Self-Assessment Committee, Member.  
**1993–1995** Undergraduate Advisor.  
**1992–1996** Mathematics Colloquium Coordinator.  
**1992–1996** Mathematics Research Seminar Coordinator.  
**1992–1995** Graduate Recruiting Committee, Member.  
**1991–1995, 2000–2003** Undergraduate Curriculum Committee, Member.

**Student Service:**

- 2008–present** Graduate Advisor for MAT students.  
**2004–2011** Undergraduate Advisor, 2004/05 cohort.  
**2001–2003** Director of *CircLES*, the Entering Students Program for Science, Engineering and Mathematics.  
**1998–2000** Graduate Advisor.  
**1995–2011** Supervised numerous individual studies courses in Advanced and Functional Analysis.  
**1993–1995** Undergraduate Advisor.  
**1993–2011** Administered 14 Master’s Examinations to 21 students.

**Professional Service:**

- 2014, 2016, 2017** *Richard Tapia Celebration of Diversity in Computing Conference*, Reviewer for scholarship applications.  
**2012** *ASEE/IEEE Frontiers in Education (FIE) 2012*, Session chair.  
**2012** *ASEE/IEEE Frontiers in Education (FIE) 2012*, Technical Program Committee (Reviewer).  
**2011** Referee for *Control and Cybernetics*.  
**2005–present** *Rocky Mountains Mathematics Consortium* Board of Directors, Member.  
**2004–2007** Referee for the *Journal of Applied Analysis*.  
**2003–2006** Referee for the *International Journal of Mathematics and Mathematical Sciences*.  
**1991–1997** Referee for the *Proceedings of the American Mathematical Society*.

**Other:**

- 2006–2008** *El Paso T-STEM Center Partners’ Leadership Group*, Member.  
**2006** *El Paso Mathematics Summit*. Planning Committee, Member.  
**2005** *Teachers for a New Era*. Author of 52 practice exam questions for *TExES* Exam 115.  
**2004–2005** *El Paso Collaborative for Academic Excellence*, K–16 Mathematics Alignment Working Group, Member.