



MAXIMA: News and Highlights from the Department of Mathematical Sciences

The University of Texas at El Paso <http://www.math.utep.edu> <http://facebook.com/utep.math> FALL 2017

From the Chair (Dr. Christina Mariani)

Dear alumni and friends: First of all, I hope that all the recent disasters have spared you as well as your families and friends. For us in the Math Department, it has been a busy but very exciting year. We continue to move toward our vision and the fulfillment of our mission (on page 4), which I want to share with you hoping that we can enlist your help in any capacity you can, as a volunteer, as a colloquium speaker, as a mentor or tutor, as a donor, or simply as a member of a community of people that share their love for math and for UTEP.

In the last five years we produced nearly 350 peer-reviewed publications and our faculty continue to receive prestigious awards in teaching, scholarship, and grantsmanship. One of the primary attributes that I believe differentiates UTEP from many institutions is the ready access to higher education for underrepresented minority undergraduate students. And we continue to grow! I am delighted to welcome Assistant Professors Drs. Sangjin Kim and Michael Pokojov. They will support the Mathematical and Statistical programs and the Computational Science and Bioinformatics programs we host and direct.

Adding to our ambitious plans, we are exploring the creation of a Ph.D. program in Data Science. We live in a time when data is collected and analyzed everywhere, our universe is explored at incredible levels of detail both micro and macro using instrumentation developed at an amazing speed. This trend will continue and its benefits are limited only by the talents and skills of people who can obtain value from this data, and we want to prepare the data scientists of the future. We are also exploring the addition of a Quantitative Analytics Lab that will offer collaborative support in order to help other organizations increase their bottom line while creating opportunities for UTEP researchers and students.

But our **vision, mission** and ambitious plans can be achieved only with the help of our dedicated staff, the sponsorship of our institution, and the support of generous Alumni and Friends. Please take the opportunity to increase the impact on student success and contributions to our field as well as society. Page 3 lists scholarship funds benefitting our students, and our Excellence Fund supports student travel to meetings and other items not covered by our budget. There are numerous existing funds available for additional support, or you can easily establish your own fund or endowment by contacting Erika Villegas, Director of Development and Donor Database Systems, 915-747-7283. *continued on page 5*

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PARTNERING TO TEACH TEACHERS

Mathematics faculty from UTEP and El Paso Community College (EPCC) held this September their fifth professional development workshop in six years for instructors who teach courses for pre-service elementary and middle school teachers. The workshop location alternates between EPCC (Transmountain Campus) and UTEP, and has also received support from Pearson. Each year, about two dozen instructors from UTEP and several EPCC campuses gather for a nearly full day (with breakfast and lunch) of interactive sessions on topics such as problem-based learning, fostering mathematical thinking, big ideas in statistics, analyzing textbook activities, and active learning. The 2017 workshop topic was helping students learn how to read mathematics textbooks. *continued on page 5*

ENGAGING WITH COMMUNITY

Many faculty, staff and students from the Department of Mathematical Sciences are involved in outreach and projects that enhance the region and support UTEP's new student success initiative (www.utep.edu/edge). In the most recently completed school year, 209 students collectively did about 18,000 hours of service learning in connection with our department's courses. Efforts by Mathematical Sciences Department faculty such as Dr. Amy Wagler to engage students in service learning contexts have been featured in *UTEP Magazine* and *The Prospector*.

Also, over 100 students (mostly math majors) engaged in about 5300 hours of community service outside of courses, including STEM/outreach-related student organizations Actuary Science Association, Club Zero, and FEMaS (Future Educators of Math and Science). Popular venues for service learning and community service included Insights Museum, the Frontera Land Alliance, and the El Paso, Ysleta and Socorro Independent School Districts.

MATH HOMECOMING IS A HIT!

Many alumni attended the department's annual homecoming week lunch in Bell Hall on Thursday October 5, including previous Gold Nugget awardee Enrique Gómez and Distinguished alumna and Gold Nugget Harriet B. May. This annual event is always a great chance to talk and network with friends and colleagues.



This year's Homecoming Week was also an opportunity to celebrate the 50th anniversary of the College of Science by holding events such as a Roundtable for Quantitative Analytics (below), with participation of Distinguished Professor Dr. Frank Hsu, previous Gold Nugget awardees Enrique Gómez, Harriet B. May and Corine Prieto, as well as Department faculty and students. Our Department has been a key member of the College of Science since the CoS' founding.



STUDENT NEWS

Pema Euden, a junior mathematics major and vice-president of UTEP's Bhutanesse Student Association, was prominently featured in a story in the fall 2017 *Minero Magazine* at www.mineromagazine.com/land-thunder-dragon-meets-land-rising-sun/.

ACADEMIC AND RESEARCH EXCELLENCE AWARDS

Fall 2016:

Mathematics - Jasmine Monique Puente (undergraduate)

Mathematics - Thomas Hughes (graduate)

MAT Mathematics - Blanca Abril Rubio (graduate)

Spring 2017:

Mathematics - Megling Hu (undergraduate)

Statistics - Isaac Ocloo (graduate)

MAT Mathematics - James Quintana (graduate)

STUDENTS LAND PRESTIGIOUS SUMMER OPPORTUNITIES

Mathematics graduate student **Luis Suárez** did a research internship this past summer with the Air Force Research Laboratory at Kirkland Air Force base. Luis has been working with his advisor, Dr. Hamide Dogan, on the topic of "Toeplitz matrices and their role in the improvement of algorithms". Because of his performance, he was selected as the winner of the outstanding scholar award known as the "Dr. Charles Stein Space Scholar".

Undergraduate physics major **Carlos R. Cuéllar Rodríguez** attended two separate summer institutes in Europe: Petnica Summer Institute and Utrecht Summer School in Theoretical Physics. These programs aim to deepen the knowledge of students in topics such as statistical physics, quantum mechanics, and other applications. Dr. Dogan advised him on his Honors Project titled "Matrix Norms of the product of symmetric Toeplitz matrices" and he presented a related poster at the Summer 2017 COURI symposium.

Also, undergraduate mathematics major **Enrique Salcido** participated this past summer in the Cryptography and Number Theory REU (Research Experiences for Undergraduates) program, which was hosted at UTEP and supervised by Drs. Emily Witt and Daniel Hernández of the University of Kansas.

ACTUARY SCIENCE UPDATE

The Actuary Student Association continues to be an active student group in the department. The student organization has a meeting place provided by the College of Science and also has a student-run website (mine-tracker.utep.edu/organization/asa). Student activities this semester will continue to focus on professional development of business-related skills and will include a renewed commitment to community service.

Alumni Data Update Form - *Keep in touch!*

Online forms at www.utep.edu/science/math/foralumni/

Name (please print): _____

Name while at UTEP, if different: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Home: _____ Email Address: _____

Degree(s) and Major: _____ Year(s): _____

Employer: _____

Position/Title: _____

Let us know what you have been up to (to be included in the department newsletter or website):

Donation Form

Yes, I want to support the Department of Mathematical Sciences!

Online donations at givingto.utep.edu/math

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DEPARTMENT VISION AND MISSION

Our Vision

We share the vision of developing our intellectually vigorous community of students and faculty, together engaging in research, teaching, and learning that advance knowledge in diverse areas of mathematics and support current progress in science. In other words, we want to make UTEP an important contributor to our community, our state, and to our country in the area of mathematical sciences.

Our Mission

- To discover, mentor, and nurture mathematically-inclined students, and provide them a supportive environment that fosters intellectual growth.
- To employ effective educational tools for our undergraduate and graduate courses, informed by the scholarship of teaching and learning of college-level mathematics.
 - to prepare our undergraduate and graduate students to develop the attitude and ability to apply mathematical methods and ideas in a wide variety of careers.
 - to provide El Paso and its region with a sufficient number of well-qualified mathematics teachers at all levels.
 - to prepare future scientists and engineers adequately for the mathematical needs of their disciplines and to give all students on campus a general education in the mathematical sciences.
- To perform widely-recognized research in focused areas of mathematical and statistical theory, methodology, and education.
- To explore applications of mathematics and statistics and engage in collaborative research in an interdisciplinary environment.
- To provide professional services based on our diverse mathematical and statistical expertise to the scientific, technical, and educational community.
- To advocate for mathematical sciences and UTEP in schools and the local community.

FACULTY LEAD CONFERENCES

Department faculty have been extremely active in organizing recent and upcoming conferences in mathematics or mathematics education. Dr. Ming-Ying Leung co-organized the 21st joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, held at UTEP on November 4, 2017.

Dr. Christina Mariani co-organized the 7th "High Frequency data in Finance and other fields" conference in November 2016 at Stevens Institute of Technology. Attended by about 150 people each year since 2009, this conference is the first one dedicated to the modeling and trading of High Frequency Data and Analytics, and has been sponsored and endorsed by the International Mathematical Union, American Statistical Association, National Sciences Foundation, the Institute of Mathematical Statistics, the Financial Systems Center at Stevens Institute of Technology, the International Association of Financial Engineers and the CME Group Foundation.

NSF-funded Project SMILES (with Dr. Larry Lesser as its PI from UTEP) sponsored the September 2017 debut of the Virtual Ongoing Interdisciplinary Conferences on Educating with Song (VOICES), the first-of-its-kind online conference on using music to teach college level STEM. Sessions are now archived at the conference website, www.causeweb.org/voices/. The conference featured two full days of programming and its 71 attendees spanned many disciplines from 22 states across the US, as well as from Canada and the United Kingdom.

Dr. Michael Pokojov is co-chairing in November the 2017 Fall School on Applied Mathematics and Statistics in Kyiv, Ukraine. Organized by five universities (including UTEP) spanning three countries, the Fall School offers Ukrainian university faculty, undergraduate and graduate students a series of advanced mini-courses by American and German professors on applied mathematics and statistics.

IN MEMORIAM

Professor Emeritus Dr. William (Bill) Joseph Leahey died of cancer September 27 at the age of 83, peacefully at his home in El Paso. He received his Ph.D. in mathematics from the Massachusetts Institute of Technology in 1962. Prior to joining the mathematics faculty at UTEP as Professor in 1968, Dr. Leahey taught at the University of Illinois and the University of Hawaii. During his 31 years at UTEP, he served two terms as department chair and was the first recipient of the College of Science Outstanding Teaching Award. Dr. Leahey knew the joy of having a career doing something he truly loved, and never lost his interest in teaching and learning. A full obituary may be found [online](#).

From the Chair *from page 1*

I am proud of you as a former student; you will always be part of our heritage, and you can also be part of our future by participating and collaborating in any of the many possible ways. Feel free to contact us with your ideas at mathdept@utep.edu, 915-747-5761.

Finally, I thank our Dean Dr. Kirken for helping the College and the Department achieve excellence in research and teaching to support UTEP's goal to become the first national research university with a 21st-century student demographic.

TEACHING TEACHERS *from page 1*

The workshop series, called "Teachers Teaching Teachers (TTT)", has been coordinated by UTEP's Dr. Kien Lim and Dr. Art Duval and EPCC's Ms. Ivette Chuca, and several UTEP faculty have given presentations. Workshop materials are archived at t-t-t.wikispaces.com/Workshop+Materials. In addition to giving EPCC instructors means for professional development credit, the workshops also provide a valuable exchange of ideas about teaching. The networking and interaction have strengthened inter-institution relationships, yielding benefits such as the alignment of EPCC's MATH 1350 and 1351 courses with UTEP's MATH 2303 and 2304, respectively. The TTT workshops continue a history of UTEP-EPCC mathematics collaboration such as the DoE MSEIP grant (see [2009 MAXIMA](#)).



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Editor: Larry Lesser

Production: Art Duval

Typesetting, MAXIMA logo: María Barraza

Photos: María Barraza, pp. 2,4; Kien Lim, p. 5

Printing: Paydirt Printing (powered by Ricoh)



Pavel Bezdek (M.S., Mathematics, 2012; UTEP Marshal of graduate students) received his Ph.D. in 2016 from University of Utah in Mathematics with focus on probability theory. Soon after, Pavel joined Citi's Institutional Clients Group's (ICG) counterparty credit risk team. He is currently working on problems related to margining, exposure aggregation and simulation model development and their implementation.

Jessica Reyes (B.S., Mathematics, 2008; M.S., Mathematics, 2010) is currently working at for Citi's Institutional Clients Group Private Bank. She processes mandatory corporate actions and verifies that they are properly reflected in multi-million dollar portfolios.

Elsa Quiroz Villa, Ph.D. (B.S., Mathematics, 1967) leads a grant from the U.S. Department of Education with mathematics faculty members Christina Mariani and Art Duval. The grant is entitled Developing Evidence-Based Learning Communities in STEM Gateway Courses: Increasing Persistence and Timely Completion of STEM and is designed to develop learning communities in pre-calculus workshops based on the integration of cooperative learning and metacognitive strategies, where students become producers and disseminators rather than strictly consumers of knowledge. Villa stated, "I am excited to return to the mathematics department in my new capacity and to be able to share my love of mathematics with first year students."



INFLECTION POINTS



(See math.utep.edu for other accomplishments too numerous to list!)

Dr. Miguel Argáez (with Dr. Martin Ceberio, Dr. Horacio Florez and **Dr. Osvaldo Méndez**) received an Outstanding Paper Award at the 2016 Conference of the North American Fuzzy Information Processing Society for "A model reduction for highly non-linear problems using wavelets and Gauss-Newton method".

Dr. Art Duval received a \$42,000 5-year Collaboration Grant for Mathematicians from the Simons Foundation, to study simplicial and cellular complexes.

Dr. Joe Guthrie served as Marshal for the College of Science at the May 2017 UTEP Commencement.

Dr. Larry Lesser won several awards in 2017 national educational contests sponsored by the National Museum of Mathematics and the Consortium for the Advancement of Undergraduate Statistics Education.

Dr. Ori Rosen served as Marshal for the College of Science at the December 2016 UTEP Commencement.

Dr. Xiaogang Su was promoted to Professor.

Dr. Amy Wagler was named co-Director of NIH BUILDing SCHOLARS Research Enhancement Core.

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