



MAXIMA: News and Highlights from the Department of Mathematical Sciences

The University of Texas at El Paso <http://math.utep.edu> <http://facebook.com/utep.math> FALL 2018

From the Chair (Dr. Christina Mariani)

Dear alumni and friends: I am happy to be writing to you again after another successful year for our Math Department, especially now that we have exciting news to share: Last year I told you that we were exploring the creation of a Quantitative Analytics Lab and a Ph.D. program in Data Sciences. Hard work, perseverance, and a lot of support from many of you and from our administration have gotten us even closer to fulfilling this vision.

Data Science is a field that is dramatically growing as a consequence of the proliferation of complex data sets in many sectors, and with opportunities in national labs, industry and academia. To take advantage of these opportunities, we are now implementing the addition of the Quantitative Analytics Lab. This lab will promote interdisciplinary research, provide practical experience for students and faculty, help students to develop professional and business skills, and create work opportunities for our students.

With the addition of the lab, and building upon the success of our three current Graduate Certification programs (in Applied Computational Mathematics, Applied Statistics, and Big Data Analytics) and our M.S. programs, we are now creating the Ph.D. Program in Data Science. One important element in the success of this program is funding. That is why I want to give special thanks to UTEP's Distinguished Engineer Allen Gilmer and Math Department's alumnus Frank Hsu, Ph.D., Clavius Distinguished Professor of Science at Fordham University in New York, and a founding father of big data, who this June announced the establishment of the [UTEP Data Science and Informatics Gift Fund](#). The fund will contribute to the expansion of the Data Science and Informatics program at UTEP. Gilmer and Hsu together will match any gift made to the fund up to \$100,000 in hopes of encouraging other alumni to donate.

Our efforts do not stop here though. The Department continues to grow, with the last five years yielding nearly 350 peer-reviewed publications and \$27 million in grants. Our faculty continues to receive prestigious awards in teaching, scholarship, and grants and have also been very active in leadership and service to the discipline. As you know from [MAXIMA 2015](#), the Department of Mathematical Sciences has a distinguished history as one of UTEP's oldest programs. We are always at the forefront of creating or using the latest technologies, pedagogies, and applications to tailor instruction to the backgrounds of our students and optimize their learning and professional preparation. Although our most important objective is to excel in academics, one of the primary attributes that I believe differentiates UTEP from many institutions is the ready access to higher education for underrepresented minority undergraduate and *continued on page 3*

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QUANTITATIVE ANALYTICS LAB

The Border Biomedical Research Center (BBRC) Statistical Consulting Laboratory (SCL) is an active hub for supporting research project across the UTEP campus and throughout the region. With the advent of data analytics as an emerging and increasingly demanded field of expertise, we are excited to announce the founding of a new unit housed within the SCL, to be called the Quantitative Analytics Lab (QAL). The QAL will be focused on applications involving data analytics, such as data mining, complex data visualizations, and statistical learning models. We plan to start promoting the QAL with regional businesses and government entities in the near future. Eventually, we will incorporate into the SCL/QAL a consulting class for graduate students to work on real-world applications of statistical and data analytics procedures with industry and government partners. This will provide graduate students opportunities for employment while they are completing their degrees.

DATA SCIENCE AND INFORMATICS GIFT FUND ESTABLISHED

On June 28, UTEP President Dr. Diana Natalicio unveiled a plaque celebrating the establishing of the [UTEP Data Science and Informatics Gift Fund](#). The fund was donated by Mr. and Mrs. Allen L. Gilmer and Dr. Frank Hsu. Allen Gilmer, named one of UTEP's Distinguished Alumni (he has an M.S. degree in Geological Sciences) in 2017, is the co-founder and executive chair of [Drillinginfo](#), a data analytics company for energy exploration decision support that is a leading provider of cloud-based data and analytics software for the oil and gas industry. Dr. Hsu, the Clavius Distinguished Professor Science at Fordham University in New York and a founding father of big data, is also a UTEP alumnus (M.S. degree in Mathematical Sciences in 1975). The fund will contribute to the expansion of the Data Science and Informatics program at UTEP. Gilmer and Hsu together will match any gift made to the fund up to \$100,000 in hopes of encouraging other alumni to donate.

MATH HOMECOMING IS A HIT!



Many alumni and friends attended the department's annual homecoming week lunch in Bell Hall on Thursday, October 4, including the Dean of the College of Science Dr. Robert Kirken, former Gold Nuggets Enrique Gómez and Corine Prieto, Distinguished Professor Dr. Frank Hsu, Dr. Elsa Villa and members of the CoS Advisory Board including 2017 Distinguished Alumni Allen Gilmer and former Gold Nugget James Cearley. Earlier that day, many alumni also enjoyed the annual College of Science Homecoming Breakfast. Department people also participated in the week's overall Homecoming activities, ranging from senior math major Dania Barroso being on the Homecoming Court to several faculty (Drs. Wagler, Lesser, Viera) successfully running the MinerDash 5K.

STUDENT NEWS

Daniel Casteneda Mogollon (M.S. Bioinformatics) was the Graduate Marshal of Students at fall 2017 commencement.

ACADEMIC AND RESEARCH EXCELLENCE AWARDS

Fall 2017:

Mathematics - Carlos Lugo (undergraduate)

M.A.T. Mathematics - Stephen Morton (graduate)

Spring 2018:

Mathematics - Pema Euden (undergraduate)

Statistics - Wimarsha Jayanetti (graduate)

M.A.T. Mathematics - Candelario Barragan (graduate)

HUNTLEY SCHOLARSHIP AWARDEES

The latest awardees of the Lawrence "Larry" Huntley and Katsuko "Kitty" Huntley Endowed Scholarship are

Isaac Alvidrez

Nathalia Carrillo

Kassandra Lujan

Charles Gordon Melton

Victoria Azcarate

Ivette Falcon

Georgina Luna

FIRST DATA SCIENCE WORKSHOP HELD

The first Data Science Workshop at UTEP was held on October 5, organized by Drs. Christina Mariani and Amy Wagler, and 1999 College of Science Gold Nugget Enrique Gómez as part of the 2018 Homecoming Celebrations, with more than 80 participants. Featured Speakers for this first edition were: Frank Hsu, Clavius Distinguished Professor of Science, a professor of Computer and Information Science, and director of the Laboratory of Informatics and Data Mining (LIDM) at Fordham University; Claire McKay Bowen, Postdoctoral Researcher in the [Statistical Sciences Group at the Los Alamos National Laboratory](#); Carlos Enrique Ortiz, Founder and Principal of [digitalworks.ai](#); Jorge Muñoz, Assistant Professor of Physics at UTEP and former Intel Data Scientist and the Round Table Discussants: Anthony Darrouzet-Nardi (Assistant Professor of Biology at UTEP); Aaron Velasco (Professor of Geology at UTEP); Corine Prieto (President of [igcworld.com](#)); Allen Gilmer (Executive Chair and co-founder of [Drillinginfo](#)); and Enrique Gómez (former IBM Executive and Director of Technology at DPS). The speakers discussed how data science can be applied in a variety of fields, including liberal arts, marketing and the sciences. Speakers talked about exciting trends in data science as well as the future of data science in industry, government and academia.



UTEP TO HOST AMS MEETING

UTEP will host its first-ever meeting of the American Mathematical Society (AMS): the Fall Central Sectional Meeting (September 12-13) 2020, on our campus. Typically, the AMS annually holds two sectional meetings in each of its four sections. Each meeting includes four invited speakers of national research prominence, and well as special sessions spanning diverse areas of the mathematical sciences. The proposal to host this meeting, written by Drs. Mike Pokojov and Art Duval, was unanimously approved by the AMS Secretariat. Ongoing updates (and paper abstracts) on the meeting will be posted at www.ams.org/meetings/sectional/2274_program.html.

Emerita Professor **Dr. Joan G. Staniswalis** passed away on April 13 in Las Cruces, New Mexico. Her career's many distinguished recognitions ranged from local (2006 College of Science Distinguished Research Award) to national, such as when the American Statistical Association named her a 2001 Fellow "for important contributions to nonparametric regression and its application to biomedical research; for collaborative research accomplishments and administrative leadership in consulting; for mentoring of students and junior researchers." Her UTEP leadership included directing the NIH-funded Minority Biomedical Research Support Program as well as the Statistical Consulting Laboratory. Her unparalleled dedication to her students included driving them in a university van to conferences as far away as San Diego, even during her spring break (see [2009](#) and [2012 MAXIMA](#) stories). Even after her 2016 retirement, she continued professional activity, including chairing the dissertation of María Barraza-Ríos (see p.5) and embarking on an ambitious mathematics tutoring project to enhance opportunities for re-entry into society by inmates at the Doña Ana County Detention Center. Obituaries appeared in the [fall 2018 issue of UTEP Magazine](#) and in the [July 2018 issue](#) of the American Statistical Association magazine *Amstat News*.

To honor her dedication to providing enrichment opportunities for students, Dr. Staniswalis' family established the **Dr. Joan Georgette Staniswalis Memorial Student Excellence Endowment**: givingto.utep.edu/StaniswalisMemorial.

Emeritus Professor **Dr. James (Jim) Nymann** passed away on January 1 in Georgetown, Texas. His 35 years at UTEP included service as Department Chair, the main developer of our M.A.T. degree, three stints as a Fulbright Professor (in Liberia, Malawi and Namibia), and service on the MAA Board of Governors. Dr Nymann twice directed summer training for the National Science Foundation for High School Mathematics Teachers, an endeavor he found very meaningful because he saw how it would improve the mathematics education of high school students. He earned the respect of colleagues with his determination to "do the right thing" in every aspect of his professional and personal life. After retiring, he visited the department several times and stayed in contact with some former students. Once he moved to Georgetown, Texas, his dedication to the department was reflected in his conversations with friends and neighbors, speaking proudly of UTEP and of the growth and achievements of the Mathematical Sciences department. His love for mathematics and teaching took him back to Malawi in the summer of 2017, where in a seminar organized by a former student, Dr. Nymann presented a "cute problem" (as he liked to refer to his results) to an audience where his former students and family were present. Dr. and Mrs. Nymann were charged with fulfilling the wishes of Mr. and Mrs. Larry Huntley in gifting a generous endowment to the department (see [MAXIMA 2015](#)). An obituary is at: www.legacy.com/obituaries/elpasotimes/obituary.aspx?page=lifestory&pid=187736309.



From the Chair *from page 1*

graduate students. And this continues to bear fruits. The department has already admitted 10 Hispanic students (out of a total of 17) to the Big Data Analytics graduate certificate program and has consistently graduated Hispanic students from our M.S. in Statistics and M.S. in Mathematics programs. In 2017 UTEP was ranked 7 in the nation by the magazine *Diverse: Issues in Higher Education* for graduate degrees in Mathematics and Statistics degrees conferred to Hispanic students.

But our 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 to society. I encourage you to make your contributions to the UTEP Data Science and Informatics Gift Fund. Your donation will be matched and will be of great help to get the Ph.D. program underway. In addition, page 3 lists scholarship funds benefiting 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 Audrey Price, Assistant Vice President of Asset Management and Development, 915-747-8522.

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.

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

Enclosed is my gift in the amount of \$_____ for:

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| <input type="radio"/> Dr. Joan Georgette Staniswalis Memorial Student Excellence Endowment | <input type="radio"/> Professor Vladik A. (Chuck) Miculka- Greater Texas Foundation Removing Educational Barriers Endowed Scholarship |
| <input type="radio"/> Everett F. and Thelma Morris Endowed Scholarship Fund | <input type="radio"/> Thelma E. Morris Endowed Graduate Scholarship Fund |
| <input type="radio"/> Lawrence "Larry" and Katsuko "Kitty" Huntley Endowed Scholarship | <input type="radio"/> UTEP Data Science and Informatics Gift Fund |
| <input type="radio"/> Mary L. Fisk Endowed Fund | |

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KINDER CLASSROOMS

Department faculty play a major role locally and even nationally in exploring and disseminating the use of kindness in the mathematics classroom, a trend especially appreciated by those students who may have more anxiety than appreciation towards our wonderful subject.

Local efforts to increase the motivation and capacity for kindness in the classroom have been supported by Dr. Kien Lim (with support of other math department faculty such as Dr. Larry Lesser), who won an award from the UTEP Center for Excellence in Teaching and Learning for initiating and leading broad-based efforts to foster a culture and community of greater loving kindness at UTEP, organizing one or more presentations at the last three years of the Sun Conference, convening monthly meetings, having a presence at campus events, launching a student group Miners for Kindness, considering an official "Community of Practice", initiating related group endeavors on mindfulness and well-being, and raising awareness about simple practices that cultivate a culture of caring and remind us that we do not just teach subjects, we teach people. Lim's group has presented kindness workshops at campus venues ranging from the UTEP L.I.V.E. conference to the Center for Faculty Leadership and Development's Fall Instructor Retreat.

Group member Dr. Art Duval's experiences applying techniques discussed by the group yielded the article "[Kindness in the Mathematics Classroom](#)" in the American Mathematical Society's blog "On Teaching and Learning Mathematics" (for which Duval is a Contributing Editor). His February 19, 2018 piece quickly became one of the most popular posts in that blog's history. Duval said, "I was pleasantly surprised at how widely this was shared, and I hope it inspires many more people to consider how to incorporate kindness in their own classrooms, and in their lives. I am very grateful to the loving kindness group for their inspiration and support." National efforts to integrate kindness and the mathematical sciences are not limited to the classroom, such as the many organizations (e.g., www.datakind.org) in the Data for Good movement.

FACULTY LEAD CONFERENCES

Department faculty have been extremely active in organizing recent and upcoming conferences in mathematics or mathematics education. The [23rd joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences](#) will be held at UTEP November 3, 2018, co-organized by Dr. Ming-Ying Leung.

NSF-funded Project SMILES (with Dr. Larry Lesser as its PI from UTEP) sponsored virtual and in-person international research/practitioner meetings in 2018 on the use of song in teaching STEM content: www.causeweb.org/voices/.

MARIA BARRAZA-RIOS GETS THE THIRD DEGREE!

María Barraza-Ríos has been giving outstanding service to the Mathematical Sciences Department since 1986 in roles spanning Teaching Assistant, Lecturer, Computer Lab Director, and Network Manager. She has also served as the Technology



Implementation Manager for the College of Science, and won the UTEP Distinguished Achievement Award for Service (see [2015 MAXIMA](#)). She now has a new title - "Doctor"!

With Dr. Staniswalis as her advisor, Barraza received her Ph.D. in Computational Science (CPS) in December 2017 with the dissertation titled *Estimating the Coefficients of a Linear Differential Operator*. Staniswalis remarked, "After 20 years of helping me reach for my dreams, it was an honor to help her meet hers. The dissertation solves a problem in functional data analysis, a fairly new area within statistical science. The dissertation was motivated by cortical auditory evoked potential curves, brain voltage potentials in response to an auditory stimulus. Evoked potential curves are of interest as a diagnostic tool for early detection of disease, such as diabetes, or of trauma to the brain. Instead of selecting features of the curves, she uses Principal Differential Analysis that assumes that the curves are governed by a differential equation. The coefficients of the differential equation are smooth functions that are estimated from the data in a novel way, under a weaker assumption providing a rigorous theoretical framework, supplanting previously ad-hoc solutions from the literature."

Since the CPS program's inception in fall 2008, there have been 45 M.S. and 24 Ph.D. degrees awarded and there are now 48 CPS faculty members from the College of Science, College of Engineering, and School of Pharmacy. From 2014 to 2017, fall enrollment numbers have increased from four to seven M.S. and 22 to 36 Ph.D. students. The program has just completed the required Graduate Program Self-Study with excellent external reviews for the Texas Higher Education Coordinating Board. Most projects are sponsored by federal agencies, such as DOE, NASA, NIH, NSF, and USDA. Research themes include computational partial differential equations and finite element methods to statistical computing and optimization, computational electromagnetics, geoscience and aerospace models, and cancer informatics.

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ALUMNI NEWS



Prince O. Aboagye (M.S. Math, 2018) began (as a funded TA) the Ph.D. program in Computing with specialization in Data Management and Analysis at the University of Utah.

Josephine Akosa (M.S. Statistics, 2014) will complete a Ph.D. in statistics from Oklahoma State University this December and begin an Assistant Professor position in the College of Business Administration at the University of Notre Dame.

Dimuthu Fernando (M.S. Statistics, 2018) began (with funding) the Ph.D. program in statistics at Old Dominion University.

Wimarsha Jayanetti (M.S. Statistics, 2018) began (with funding) the Ph.D. program in statistics at Old Dominion University.

M. Alejandra Sorto (B.S. Math, 1990; M.S. Statistics, 1992) was promoted to full professor at Texas State University in the Department of Mathematics, where she researches preparation of teachers in the area of Statistics, the impact of professional development, and comparative studies in Latin-America and Africa. She recently chaired a major national conference (TODOS), edited an international conference proceedings (ICOTS), concluded an NSF CAREER grant, and started a rotation as an NSF Program Director (DRK-12).

Luis Suárez (M.S. Mathematics, 2018) began (with funding) the Ph.D. program in pure mathematics at Michigan State University.

Yi Xie (M.S. Statistics, 2018) began (with funding) the Ph.D. program in Computational Sciences at UTEP.

Zheng Zhang (M.S. Statistics, 2018) began (with funding) the Ph.D. program in Business Analytics at the University of Tennessee, Knoxville.



INFLECTION POINTS



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

Dr. Art Duval served as CoS Faculty Marshal of Students at fall 2017 UTEP Commencement.

Dr. Helmut Knaust was recognized by ORSP for outstanding efforts in securing extramural funding for his work as co-PI of the NSF-funded LSAMP Bridge to the Doctorate Program.

Dr. Larry Lesser had a winning song in the 2018 contest held by the National Museum of Mathematics and had his NSF grant featured in the [2018 NSF STEM for All Video Showcase](#).

Dr. Ori Rosen was recognized by ORSP for outstanding efforts in securing extramural funding for his 3-year NIH grant titled "A Statistical Framework for the Spectral Analysis of Electrophysiology".

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