

From the Chair (Dr. Christina Mariani)

I am happy to be writing to you again after an outstanding year for our Mathematical Sciences Department! We have exciting news to share: our proposal for a Data Science PhD has been recently approved in the Board of Regents meeting held in Austin on August 14. We believe that this new PhD program in Data Science will be essential for preparing students in Texas for the types of positions that are critically needed in this age.

We are also implementing the addition of the Data Analytics Lab that 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.

The field of Data Science is growing dramatically due to the proliferation of complex data sets in many sectors and to increasing opportunities in national labs, industry and academia. With this new Data Science PhD program, the addition of the lab, our MS programs and our three Graduate Certification programs (Applied Computational Mathematics, Applied Statistics, and Big Data Analytics), we are fulfilling the goal of being leaders in this area.

These ambitious plans can be achieved only with hard work, perseverance, and a lot of support from many of you and from our administration. One important element in the success of these Data Science programs is funding. That is why I want to give special thanks to UTEP's Distinguished Alumnus **Allen Gilmer** and Math Department's alumnus and 2019 UTEP Gold Nugget **Frank Hsu**, PhD, who last year established the UTEP Data Science and Informatics Gift Fund. The fund will contribute to the expansion of the Data Science and Informatics programs at UTEP. Dr. Hsu is the Clavius Distinguished Professor of Science at Fordham University in New York, and a founding father of Big Data.

However, our efforts do not stop here. The Department continues to grow, with the last five years yielding nearly 350 peer-reviewed publications and \$35 million in grants. Our faculty continues to receive prestigious awards in teaching (recently Drs. **Duval**, **Knaust**, **Lesser**, **Lim** and **Wagler** have been named members of the UTEP Academy of Distinguished Teachers (see story on p. 2)), scholarship, and grantsmanship and have been very active in leadership and service to the discipline. In fall 2020, a Sectional American Mathematical Society meeting will be hosted for the first time at UTEP (see story on p. 5). As you know, the Department of Mathematical Sciences has a distinguished history as one of UTEP's oldest programs. We have faculty always at the forefront of using or creating the latest technologies, pedagogies, and applications to tailor instruction to the backgrounds of our students and optimize their learning and professional preparation.

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DEPARTMENT TO LAUNCH ITS FIRST PhD PROGRAM: DATA SCIENCE!

A PhD program in Data Science received approval this August from the UT System Board of Regents to become UTEP's 23rd doctoral program and the first one housed completely in the Mathematical Sciences Department. The program could start as early as fall 2020, depending on the result of a site evaluation by the Texas Higher Education Coordinating Board.

The proposed PhD in Data Science combines mathematics, computing and statistics to develop and apply methodologies required for data-driven industries. Our proposed program will prepare and train individuals who can immediately obtain positions in business and industry that use data to guide decision-making. This program also involves applied training that will allow graduates to collaborate with others to drive innovation.

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ALUMNUS DR. FRANK HSU WINS 2019 GOLD NUGGET AWARD

Dr. Frank Hsu, who earned an MS in Mathematics from the Department in 1975, received a **2019 Gold Nugget Award from UTEP** for his pioneering and prolific work in data science research and education, as well as for his ongoing support of UTEP, our college and department (see pages 1-2 of *MAXIMA 2018*). He supported the creation of a Graduate Certificate in Data Analysis and of a PhD in Data Science, as well as curriculum development in this area. He is a life member of the UTEP Alumni Association, often networking with and mentoring alumni in the New York area, where he is the Clavius Distinguished Professor at Fordham University, a professor of computer and information science, and the director of the Fordham Laboratory of Informatics and Data Mining.



Dr. Frank Hsu receives award from Dr. Heather Wilson and Dr. Robert Kirken

ALUMNI LUNCH SUCCEEDS!

Many alumni attended the department's annual homecoming week lunch in Bell Hall on Thursday October 3, including Gold Nugget awardee Dr. Frank Hsu and alumna Dr. Elsa Villa, as well as Department faculty and students. This annual event is always a great chance to talk and network with friends and colleagues. This particular year's [Homecoming Week](#) was also an opportunity to celebrate the first fall semester of UTEP having R1 status, as well as the Department preparing to have its first PhD program.



DATA SCIENCE PhD *(from page 1)*

Recent surveys suggest that there is currently a deficit of people with this type of training; in fact, over 40% of companies report not being able to find personnel for positions that require expertise in processing and modeling data to make decisions.

On a related note, the Department is also happy to announce to start of its Data Analytics Lab, an extension of the current [Statistical Consulting Lab](#), which is funded through the Border Biomedical Research Center. Dr. Wagler will direct both labs. The focus of the Data Analytics Lab will differ from the Statistical Consulting Lab in two ways: (1) The DA lab is focused on developing collaborations with industry and government agencies rather than working with UTEP researchers, and (2) The consulting will focus on modern data science methodologies rather than classic statistical methods. We are excited about the opportunity to work with community partners in the El Paso region. We note that this lab will also provide opportunities for future Data Science PhD students to work on interdisciplinary research projects with area businesses as part of their training. An Introduction to Data Science Consulting course will prepare students prior to working on projects and will be taught by the director of the lab. This course will likely be piloted during the first year of the PhD program.

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FACULTY NAMED TO ACADEMY OF DISTINGUISHED TEACHERS



The Mathematical Sciences Department is well represented in the newly-launched [UTEP Academy of Distinguished Teachers](#), with five faculty named this April among its 62 inaugural members (in order of appearance in the photo with then-President Dr. Diana Natalicio): Drs. Art Duval, Lawrence Lesser, Helmut Knaust, Amy Wagler, and Kien Lim. (A sixth professor, Mourat Tchoshanov achieved his qualifying status under a joint appointment with our department. And another member, Dr. David Carrejo, received his Mathematics and Master of Arts in Teaching Mathematics degrees from our department.)

These faculty, all winners this past decade of a Regents' Outstanding Teaching Award from the UT System, were recognized at 2019 Spring Convocation for their accomplishments and potential to provide instructional leadership for the UTEP community, such as Dr. Wagler's plenary presentation at the 2019 Fall Instructor Retreat. These departmental faculty have collectively won several other awards as well (Minnie Stevens Piper Professor Award, Chancellor's Council Teaching Excellence Award, MAA Southwestern Section Award for Distinguished College or University Teaching, UTEP College of Science John R. Bristol Award for Teaching Excellence, etc.) and/or have served as a Fellow or Director of UTEP's campus-wide teaching center.

ACADEMIC AND RESEARCH EXCELLENCE AWARDS AT COLLEGE OF SCIENCE PRE-COMMENCEMENTS

Fall 2018:

Mathematical Sciences - **Shawn Vorreyer** (undergraduate)

Spring 2019:

Mathematical Sciences - **Dawa Gyalpo** (undergraduate)

Bioinformatics - **Mariana Vasquez** (graduate)

Computational Science - **Jonathan E. Mohl** (graduate)

Mathematical Sciences - **Angel Aguero** (graduate)

Statistics - **Benard Dechi** (graduate)

Alumni Data Update Form - *Keep in touch!*

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

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COLLEGE OF SCIENCE HOMECOMING BREAKFAST

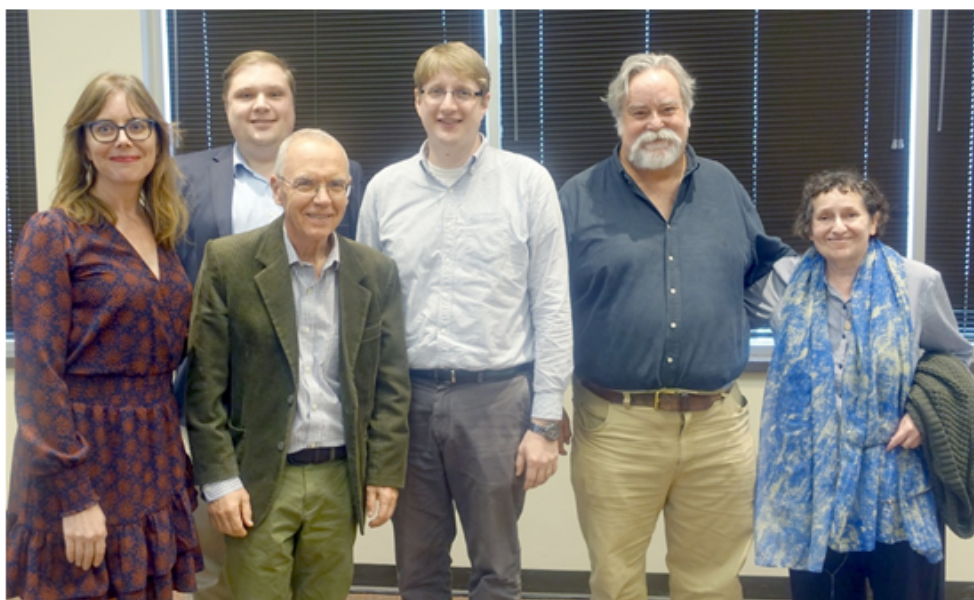


Dr. Frank Hsu honored as Gold Nugget awardee at the Homecoming Breakfast hosted by UTEP's College of Science.



Mathematical Sciences department chair Dr. M. Christina Mariani, 2007 Distinguished Alumna Ms. Harriet B. May, College of Science Dean Dr. Robert Kirken, 2019 Gold Nugget awardee Dr. Frank Hsu.

DATA SCIENCE WORKSHOP



The second Data Workshop (titled "Data Science Essentials – Skills to become a Data Scientist") took place on October 1. From left to right, Dr. Amy Wagler, Dr. Michael Pokojovy, Dr. Stephen Vardeman (Iowa State University), Dr. Joe Allen (TACC Life Sciences Computer Group), Mr. Allen Gilmer (founder of Enverus), Dr. M. Christina Mariani.

CONFERENCE CORNER

UTEP's FIRST AMS MEETING APPROACHES

As mentioned in [MAXIMA 2018](#), 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. **Art Duval**, **Maria C. Mariani** and **Michael Pokojovy**, was unanimously approved by the AMS Secretariat. Ongoing updates (and paper abstracts) on the meeting will be posted at [the AMS website](#), including special sessions sponsored or co-sponsored by UTEP faculty.

ALGEBRA MEETING A 'SLAM' DUNK!

The [Southwest Local Algebra Meeting \(SLAM\)](#), a regional annual conference, was held for the first time at UTEP this past February. UTEP faculty Drs. **Art Duval** and **Piotr Wojciechowski** were one of the conference organizers and invited speakers, respectively, and UTEP had 16 of the 76 faculty and students who participated. The conference was supported by a National Security Agency grant, the College of Science, and the Department of Mathematical Sciences Gift Fund (which is fueled by donations from our alumni and friends). Remarked attendee David Jorgensen, a UT-Arlington professor and conference co-organizer, "Out of the ten SLAM meetings we've had so far, this was probably my favorite! Things ran very smoothly. Everyone was so friendly, and the venue was beautiful."

FACULTY LEAD CONFERENCES

Dr. **Ming-Ying Leung** co-organized the [25th joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences](#), held at UTEP on November 2, 2019.

Dr. **Christina Mariani** co-organized the 8th "High Frequency data in Finance and other fields" conference in June 2019 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.

Dr. **Larry Lesser**'s NSF-funded Project SMILES sponsored in 2019 the third annual VOICES (Virtual Ongoing Interdisciplinary Collaborations on Educating with Song) conference, the first-of-its-kind online conference on using music to teach STEM. Sessions are now archived at the conference website, www.CAUSEweb.org/voices. The conference was written up in [Forbes](#).

From the Chair *from page 1*

One of the primary attributes that differentiates UTEP from many institutions is the ready access to higher education for underrepresented minority undergraduate and graduate students. This accessibility continues to bear fruit. For example, the department has already admitted 17 Hispanic students (out of a total of 36) to the Big Data Analytics graduate certificate program and has consistently graduated Hispanic students from our MS in Statistics and MS in Mathematics programs. In the last six years, UTEP has been ranked in the top ten by *Diverse: Issues in Higher Education* for Mathematics and Statistics degrees conferred to Hispanic students at both the undergraduate and master's levels. More information is available at the Department of Mathematical Sciences website: <http://math.utep.edu>.

This year I am also delighted to welcome Assistant Professors Dr. **Suneel Chatla** and Dr. **Youngjoo Cho**, hires that will support our Data Science program and the Computational Science program that is hosted and directed in the Department.

Our ambitious goals 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. 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 PhD program underway. In addition, 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 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 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 becoming the only predominantly Hispanic university in the US to receive the R1 designation by the Carnegie Classification of Institutions of Higher Education.



Jazmin Quezada (MS Mathematics, 2019; currently pursuing MS in Statistics) completed a successful internship in Los Alamos National Laboratory (LANL), researching machine learning real world applications, including missing data. She was mentored by Claire McKay Bowen and Joanne R. Wendelberger, supported by LANL and the DoE grant "Research Capacity Building at UTEP" (PI is alumna Dr. Elsa Villa and co-PI is Dr. Mariani).

Dr. **Enrique Treviño** (BS in Mathematics, May 2006) was one of four mathematicians featured in an article in the [August 2019 AMS Notices](#) celebrating Hispanic Heritage Month. A number theorist and associate professor at Lake Forest College, he recently did [an interview on KTEP](#) and attended the IberoAmerican Math Olympiad as the team leader of the Mexican team.

Dr. **Julian Viera** (BS Mathematics, 1992; MS Mathematics, 1994) completed 23 years as a Lecturer and 9 years as precalculus/calculus coordinator in our department and now is an assistant professor in the area of mathematics education in the Mathematics Department at Berea College, in Berea, Kentucky.



INFLECTION POINTS



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

Dr. **Hamide Dogan Dunlap** received a \$59,999 ConTex Collaborative Research grant "Transitional Points in Constructing Linear Algebra Concepts".

Dr. **Larry Lesser** won awards in 2019 national educational contests sponsored by the Consortium for the Advancement of Undergraduate Statistics Education, and his current NSF-funded Project SMILES (Student-Made Interactive Learning with Educational Songs) won the "Mid/Advanced Career category" grand prize in the 2019 We Are Mathematics Video Competition sponsored by the National Science Foundation, and featured at the 2019 National Math Festival.

Dr. **Ming-Ying Leung** served as CoS College Marshal at Spring 2019 CoS Precommencement.

Dr. **Osvaldo Méndez** was promoted to Professor.

Dr. **Panagis Moschopoulos** retired and was named Professor Emeritus.

Dr. **Granville Sewell** is spending two months this fall at the UNAM Centro de Geociencias in Querétaro, Mexico, teaching and working on research funded by an UNAM PREI grant.

Dr. **Amy Wagler** is PI or co-PI on four grants that began July 2019: The El Paso Partnership for the Preparation of STEM Teachers to Implement Project-Based Learning (\$1.2 M), "Phase II of BUILDing SCHOLARS - Training Core" (\$4.1 M), "Phase II of BUILDing SCHOLARS - Institutional Development Core" (\$2.4 M), and "Border Biomedical Research Center" (\$20 M).

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