



MAXIMA: News and Highlights from the Department of Mathematical Sciences

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From the Chair

I am very pleased with our latest accomplishments and continuous growth. The Department is very active in research, with the last five years yielding nearly 300 peer-reviewed publications and \$15 million in grants. Our undergraduate program enrollment increased from 152 to 271 majors during the last four years, and our faculty have consistently received prestigious awards in teaching, scholarship, and grantsmanship.

Our faculty have also been very active in leadership and service to the discipline. I co-organized the 4th annual Modeling High Frequency Data in Finance Conference, sponsored by NSF, ASA, IAFE, and IMU that was held at Stevens Institute of Technology, Hoboken this past July. The conference was a success and we received a letter of congratulation from New Jersey Congressional Representatives. Also, Drs. Behzad Djafari-Rouhani, Osvaldo Mendez, Son-Young Yi, Indranil SenGupta and I are co-organizing the 36th annual Texas Partial Differential Equations Conference on March 2-3, 2013, which will be held at UTEP for the first time. And Dr. Larry Lesser is on the Program Committee for the 2013 United States Conference on Teaching Statistics and Drs. Kien Lim and Art Duval helped co-organize a Teachers Teaching Teachers workshop for UTEP and EPCC.

I am also delighted to welcome visiting research faculty Drs. Ghodrattollah Aalipour and Svetlana Amirova, as well as the following new lecturers (most of whom are UTEP alumni): full-timers Drs. Yin Lin and Jianchun Zhang and part-timers Jose Avila, Francis Biney, Maduranga Dassananyake, Adrian Delgado, Donald Haney and Vodene Schultz.

Most of all, I thank Alumni, Friends and Faculty for last year's generous contributions. On page 3, you will find a list of scholarship funds benefitting our students, and our Excellence Fund supports student travel to meetings and other items not covered by our budget. We are always looking to promote talent at UTEP and this is your opportunity to help. If you would like more information about donating to the department, please contact Victoria Gutierrez, (915)747-8257 or vsgutierrez@utep.edu.

– Dr. Christina Mariani

DR. MARIANI AWARDED CHAN PROFESSORSHIP

Dr. Maria Christina Mariani has been appointed to the Shigeko K. Chan Distinguished Professorship in Mathematical Sciences, UTEP's most endowed academic position in this discipline. Respected long-time El Paso urologist Dr. James Chan established the professorship to honor the memory of his beloved partner of nearly 30 years who had a love of mathematics and a passion for education. Dr. Mariani states, "I share the vision of President Natalicio of UTEP as a center of Access & Excellence in Teaching & Research, and as the recipient of this Endowed Professorship I will strive to make UTEP a premier institution of higher education."

CPS BEGINS GRANTING PhDs!

Computational Science, an interdepartmental program housed in the College of Science had a major milestone with Kiran Katta becoming the first student to defend a doctoral dissertation. The program, now entering its fifth year, had previously graduated master students, but expects to have eight Ph.D. graduates by the end of the current school year. As of this semester, the program has had 26 Ph.D. and 2 M.S. students, and program students have co-authored 27 articles with their research advisors.

TEACHING AWARD STREAK CONTINUES

Dr. Kien Lim won a 2012 Regents' Outstanding Teaching Award from the University of Texas System. This is the *fourth* straight year the Department has had a winner of this award (Dr. Lawrence Lesser, 2011; Dr. Mourat Tchoshanov, 2010; Dr. Art Duval, 2009), which entails rigorous multi-level review of a detailed 150-page dossier of evidence. Dr. Lim's teaching is characterized by having students consistently experience mathematics as thinking, sense-making, and problem-solving, rather than as a collection of facts and procedures. In a further expression of dedication to students, Dr. Lim donated a portion of his sizeable cash award to support travel by mathematics education students.

STUDENTS GET GLORY WITH COURI!

Four students presented mathematics-related research at COURI [Campus Office of Undergraduate Research Initiatives; <http://science.utep.edu/couri/>] symposia this past spring or summer. COURI director Lourdes Echegoyen notes that “undergraduate research is a practice with one of the highest impacts on student learning and one of the most effective mechanisms for increasing a university’s graduation rate, keeping students on track in their chosen major and influencing them toward making the decision to pursue advanced degrees.”

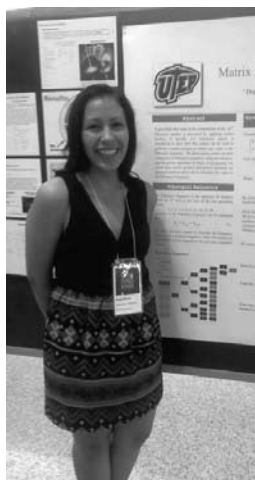


Jesus Loya

(photo by Abigail Muniz)

Jesus Loya and Abigail Muñiz presented “Matrix Product Application to Fibonacci Sequence” under the supervision of Dr. Hamide Dogan. They were both motivated to do research by the annual Club Zero trip to SUnMaRC [Southwestern Undergraduate Mathematics Research Conference], where they presented their initial work.

Neither student had taken a course in matrix or linear algebra at the time, but they learned a lot that helped them with their Matrix Algebra course that they each took this summer. The pair, who met in a math course last fall, and have now been in five courses together, will continue their work this year. Both plan to



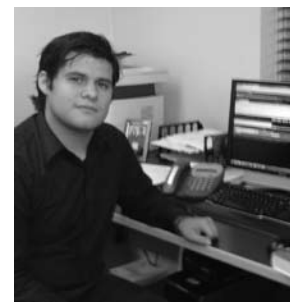
Abigail Muñiz

(photo by Jesus Loya)

graduate in 2013. Jesus, who says “I like proving things,” is in the MaST [Math and Science Teachers] Academy this year, and plans to pursue a master’s degree. Abigail is in UPBiT [Undergraduate Participation in Bioinformatics Training] this year, and says, “Since I was a kid, I’ve always dreamed of getting my Ph.D. and then going to Africa to teach kids math or get them interested in math, or even adults.”

Irving Martinez, an applied math major, presented “Light vs. Quantum Gravity,” a topic for which he won awards while still in high school for early versions of his work. His research aims to connect all the forces of the standard model of physics with gravity, and how they all apply to light. “I like to think of it as a puzzle, and I put the pieces together,” he says. Irving plans to take the Putnam exam in December and is also on the UTEP speech team.

Ariel González presented “Assessing Readability of College-Level Statistics Textbooks: A Quantitative Lexical and Grammatical Analysis” under the supervision of Drs. Amy Wagler and Lawrence Lesser. Ariel examined the lexical features of four topics in each of eighteen different statistics textbooks in order to understand what features make books more readable for students, including English Language Learners. Ariel started as a civil engineering major, switched to architecture, and is now planning to become a math or physics teacher in high school. He is already a tutor at Eastwood Knolls Elementary School.



Ariel González

(photo by Art Duval)

TENACIOUS TEN TAKE I-10

Still “going the extra mile” (see *MAXIMA* 2009), Dr. Joan Staniswalis and staff member Maria Barraza-Rios drove a UTEP van with nine UTEP graduate students from El Paso to San Diego for the world’s largest annual gathering of statisticians, the Joint Statistical Meetings. The students participated in an NSF-funded workshop on diversity and mentoring and Angélica Monárrez co-authored a presentation in an invited paper session. The trip was supported by funds from our department and the College of Science, as well as by funds from NSF and NIH.

Monárrez (now in UTEP’s Ph.D. program in Teaching, Learning, and Culture) relates, “During the diversity workshops there were some talks about different careers in statistics and we talked to fellow graduate students, former students, and professors. The best part was about hearing about the issues that former graduate students had. I now feel like I am not the only one and that I can succeed too, especially after seeing many minorities and women in this field. The mentoring program was a great way to interact with professors. Overall, I enjoyed going to JSM: there was always a friendly environment where people were willing to share ideas and experiences. Seeing some slides of my work was really exciting and I hope to be one day giving a talk at JSM.”

CLUB ZERO HAS BUSY YEAR

Highlights from last fall included recruiting donors for blood drives (yielding 42 units!), hosting a student-faculty Thanksgiving luncheon, and taking a “Club Zero Below Zero” trip to Ski Apache and Cloudcroft. The spring featured the annual trip to SUnMaRC [Southwestern Undergraduate Mathematics Research Conference; held in Tucson in conjunction with the MAA Southwestern Section meeting], where four of the 11 attending UTEP students gave talks. Other events included a Bowling Night and a year-end Game Day with students and faculty playing various board games.

MAXIMA Staff

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Carmen Leal (B.A., Mathematics, 1971) retired at the end of last year from Immigrations and Customs Enforcement, as Assistant Chief Counsel.

Harriet May (B.S., Mathematics, 1971; UTEP Distinguished Alumni Award recipient in 2007) retired after working for GECU for 38 years (including 16 years as CEO) and was inducted this year into the Texas Credit Union Hall of Fame.

Vivian Nevarez (B.S., Mathematics, 2012) graduated with her B.S. degree and teaching certificate at the age of only 20, thanks to being part of the pioneering class to progress through the Texas Early College High School Initiative in Socorro ISD.

The late **Juana Serna** (B.A., Mathematics, 1951) was profiled in fall 2011 *UTEP Magazine* for her pioneering scientific accomplishments at White Sands Missile Range and for establishing an endowed scholarship for graduates from Bowie HS (where she went) pursuing math and science degrees.

Alumni Data Update Form

Department of Mathematical Sciences

Please return this form or visit <http://www.math.utep.edu/alumni> so we can update our records!

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

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INFLECTION POINTS

(see www.math.utep.edu for other faculty accomplishments too numerous to list!)

Dr. Helmut Knaust received a 2012 “Millionaire Research Award” from UTEP’s ORSP for having sponsored research expenditures over \$1 M in Fiscal Year 2011.

Dr. Larry Lesser received a two-year grant from the National Science Foundation, co-authored a textbook published by Freeman, and won the Scholarship of Teaching and Learning Award at the 2012 International Sun Conference on Teaching and Learning.

Dr. Kien Lim was awarded tenure and promoted to Associate Professor.

Dr. Ori Rosen received a \$61,930 two-year grant from the National Security Agency for “Bayesian Analysis of Correlated Data.”

Dr. Lawrence Swienciki recently published eight posters on Greek mathematics (see math-history.com).

Drs. Leticia Velázquez and Miguel Argáez received a \$1.25 million grant from Stanford University and the Army High-Performance Computing Center to develop novel approaches to integrate new high performance techniques in simulation and modeling to solve large-scale optimization problems. Dr. Argáez also received a \$250,000 continuation grant from the Repsol Energy Company to conduct seismic classification using novel optimization techniques. Drs. Argáez and Velázquez are also part of the research team for UTEP’s Cyber-ShARE (Cyberinfrastructure for Sharing Resources to Advance Research and Education) Center of Excellence, which received a \$5 million continuing five-year grant from the NSF. Dr. Velázquez was promoted to Full Professor.

Dr. Son-Young Yi received a \$263,569 three-year grant from the National Science Foundation for “A mixed finite element framework for Biot’s consolidation model and its interface problems.”

