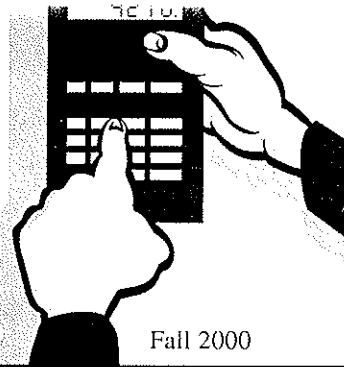


# MATHEMATICAL SCIENCES

THE UNIVERSITY OF TEXAS AT EL PASO

Fall 2000



## FROM THE CHAIR

This fall the department welcomes three new Assistant Professors and is hosting five Visiting Professors. Drs. Leticia Velazquez and Maria Cristina Villalobos, who both received their Ph.D.'s in Applied Mathematics from Rice University, and Dr. Osvaldo Mendez, whose Ph.D. is from the University of Minnesota in Partial Differential Equations, are the new tenure-track faculty members. Visitors by specialty are: Mathematics-Drs. Jingjing Ma and Mohammed Yahdi; Applied Mathematics-Drs. Miguel Argaez and Zhenyuan Wang; and Statistics-Dr. Mohammed Meshkani.

Meet these new people and visit with other alumni, faculty and friends of the department at the Homecoming Coffee 10:00 a.m. to noon, Saturday, October 21, 2000 in Bell Hall. You are also invited to the College of Science reception later that day (4:00 p.m.-6:30 p.m.) in nearby Leech Grove. Both events are free and require no reservation. I hope to see you there.

Finally, I would like to thank all who have contributed this past year to the department's Gladman Scholarship Fund and the Departmental Excellence Fund. The last few years have brought increases in tuition and fees that make it even more important for us to be able to provide scholarships for outstanding math students. Contributions to the Excellence Fund help us pay for student travel to conferences and other items not covered by our budget. Your continued support will be greatly appreciated, and new contributions in any amount are welcome, of course.

--Joe Guthrie

## Master of the Art of Teaching Mathematics Degree Revamped

What can you do with an MAT (Master of the Art of Teaching) degree? Our recent graduates have the answers. Steven Robles and Rosmary Silva have joined forces at Americas High School here in El Paso, using new books, methods, and computer technology to revitalize all levels of the math program there. For example, they are using self-discovery investigations in geometry with the latest dynamic computer software. David Carrejo originally came to UTEP to become a math teacher at Cathedral High School, just like his father, but stayed on to finish an MAT, and is now working on his Ph.D. in math education at UT Austin, creating new approaches to trigonometry through its history. We may someday be lucky enough someday to have David back here as a professor at UTEP. Rula Hashem wrote the first MAT thesis under the new guidelines, creating a computer-animated version of some classic medieval Persian geometry. Rula now teaches as an instructor here in the math department at UTEP.

These students were all able to create programs that fit their different needs because the Department of Mathematical Sciences recently revised its MAT graduate degree program to provide greater flexibility in serving the needs of secondary and college mathematics teachers, as well as those who choose careers in mathematics education research, such as software development, textbook publishing, and teacher development. The goal of the program is to combine a broad base of graduate level mathematics courses with technological expertise, and integrate the two within the latest theories of knowledge and cognition. Two new graduate courses have been developed by the math department's Dr. David Dennis.

Math 5360, Introduction to Research in Mathematics Education, provides background on the latest theories of cognition and their impact on student understanding of mathematics, with a special focus on technological and scientific environments. Math 5365, Technology in the Mathematics Classroom, looks in depth at the latest educational computer software and their effective use in mathematics classrooms at all levels.

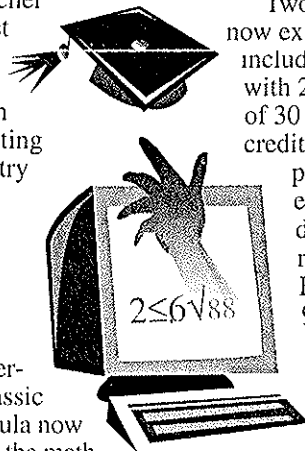
Two different MAT degree options now exist: The thesis option, which includes 12 credits of thesis research with 24 class credit hours for a total of 30 credit hours; or the regular 36 credit hour option. The thesis option

provides the opportunity to engage directly in curriculum development, classroom-based research, or clinical research. Either option may include up to 9 undergraduate credit hours in upper division math from the approved list. This may be especially important for those entering the program without a Bachelor's degree

in mathematics. The program is now tailored to facilitate those who want to continue on from a BS or BA in mathematics straight into the MAT program. Up to 6 credits of approved graduate credit in the College of Education may be included. This is especially appealing with the recent arrival of Dr. Mourat Tchoshanov, an expert in secondary mathematics education from Russia, in the Department of Teacher Education.

Experienced teachers are encouraged to enter the program, although teaching experience is no longer a prerequisite. Public school certification is not a mandatory part of this program, but is available through the College of Education.

If you are interested in pursuing this degree, please contact Dr. David Dennis at (915)747-6775.



# TexPREP AT UTEP

As they have each of the past eight years, over two hundred of El Paso's brightest middle school and high school math students descended upon the UTEP campus this summer for an eight week immersion in math, science, and engineering called TexPREP (Texas Prefreshman Engineering Program). Though most only attend one year, others return for as many as three summers, all at no cost to themselves or their families.

Why do these students give up their summers to spend more time in school? Saul Fernandez says TexPREP "really prepared not only myself but my family in what is needed to accomplish your goals. And what will need to be done after high school." He also says he valued "its ability to inspire and push me to the next level. The program made me go past my abilities and see a whole new scene." David Garcia speaks for many when he says it "got me ahead of the pack by the time I went back to school. I was more prepared than students that did not attend PREP at my school. It really helped me intellectually." And Ruth Martinez says it "really helped me improve my math skills. I liked that it got me ahead and helped understand Calculus better."

The El Paso component of TexPREP was brought to the UTEP Department of Mathematical Sciences in the summer of 1993 by Dr. Mike Gray, who is largely responsible for building the program into what it is today. Upon Dr. Gray's retirement last year, Dr. Sally Blake of the College of Education became director, but the program continues to be administered through the math department, and remains physically located in Bell Hall.

The goals of TexPREP are to develop students' abstract reasoning skills and problem-solving skills, and to encourage students to enroll in college and pursue careers in mathematics, science or engineering. At the core of the program is a series of rigorous courses in mathematics, physics, engineering, and problem-solving. The math courses are: Logic, for first-year students; Algebraic Structures (groups, rings, and fields, using integers and rationals as models) for second-year students; and Statistics and Probability for third-year students. Some school districts award one high school elective

credit for each summer completed.

But this year, new material from NASA's "Mars 2000" project was interwoven throughout the curriculum as a unifying and motivating theme. Students formed small groups to analyze and design different components of a future manned mission to the Red Planet. For instance, one group considered the flight itself, looking at fuel delivery systems, recirculation of oxygen, etc. Another group considered the habitat of a Mars colony, dealing with water, waste disposal, and the effects of low gravity. Each group had a great deal of freedom in solving its problems, and saw first-hand that there's not just one road to a solution.

Egg drop and rocket launching design competitions provided more down to (and up from?) earth activities. Students also visited the Space Museum and IMAX theater in Alamogordo, NM, and saw the technology behind sounding rockets, which send scientific measuring/recording instruments high above the earth's surface, at White Sands Missile Range. And there were weekly talks, mostly by UTEP faculty from the Colleges of Science and Engineering, including the Dean of each College, and the math department's Dr. Piotr Wojciechowski. The most popular speaker of the summer, however, may have been El Paso Mayor Carlos

Ramirez, a UTEP graduate and former engineer. Students snapped many photos of Hizzoner, and eagerly listened to him describe how UTEP prepared him well for his engineering career.

This year's teachers were primarily El Paso middle and high school math and science teachers, each of whom is working on either a Master's in Education, with a concentration in math or science, or an MAT (Master of the Art of Teaching) from the math department. They combined TexPREP with their master's programs by all enrolling in a special section of Logic taught by Dr. Ralph Liguori during UTEP's summer session, which not only tied into the logic course they were in turn teaching to the first-year students, but also counted towards their degree plans. Another kind of synergy is found in the population of the program assistants, who supervise small groups of students in study sessions and check class assignments, and who are mostly current UTEP students and sometimes TexPREP alums themselves.

Funding for this year's TexPREP program came from UTEP, NASA, the State of Texas, Texas Academy of Mathematics and Science, the Texas Department of Human Services, the Texas Higher Education Coordinating Board Eisenhower Program, and the Upper Rio Grande Workforce.

## Shigeko Chan Professorship Established

The first endowed chair in mathematical sciences at UTEP has been established to honor the memory of a woman, Shigeko K. Chan, who was not a professional mathematician, but who always loved mathematics and made it her hobby.

She passed on her intense love of learning and mathematics to her children, all three of whom were valedictorians at Eastwood High School here in El Paso. Her two sons, John and Paul, both became doctors, and her daughter, Ann, became a lawyer.

Shigeko Chan's husband, long-time El Paso urologist Dr. James

Chan, established the professorship in her memory as a way of giving something back to the El Paso community that had helped him to become successful. Although neither he, his wife, nor any of their children had attended UTEP, Dr. Chan still felt UTEP was the best place for his generous gift.

In the spring, Dr. Joe Guthrie was named as the first Shigeko K. Chan Distinguished Professor of Mathematical Sciences. (Adapted from an article in NOVA, Fall 1999.)

# ALUMNI NOTES

**Ann Gray Noblett** (B.S. '56) received her MSM in math from ISU in 1987, and this spring she retired from being an Assistant Professor at Valdosta (Georgia) State University, and moved to Duluth, GA.

**Steven Scheiner** (B.A. '63) has spent over 30 years in public accounting, specializing in income tax planning, estate and retirement planning, and financial consulting. He is now president of his own accounting firm in Phoenix.

**Kenneth Luckett** (B.A. '64) is retired from White Sands Missile Range, where he was a mathematician for 36 years. With his wife Barbara, he has built a house in New Braunfels,

where he now landscapes, golfs, and volunteers in public schools and the Methodist church.

**Harry Zimmer** (B.S. '67) is director of operations, planning & measurement at El Paso Energy in Euless, TX, where he works with a group building measurement, modeling and control systems and dispatches onshore and offshore gas-gathering assets. He also writes " 'Dr.' Gladman was an inspiration! So glad to see a fund in his name!"

**Carmen (Sandoval) Leal Frownfelter** (B.A. '71) received her J.D. at UT Austin in 1985, and is now a trial attorney with the Department of Justice here in El Paso.

**David Dampier** (B.S. '84) is an assistant professor of computer science at Mississippi State University.

**Sivakumar Natarajan** (M.S. '93) has been married for five years now, and has a two-year old daughter. He is a program manager at Cisco Systems in San Jose, CA.

**Jiazheng He** (M.S. '95) is an SAS programmer at California Medical Review, Inc., which works with California's Medicare program, in Alameda, CA.

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## Alumni Data Update Form

### Department of Mathematical Sciences

Please fill in the form below so we can update our records

Name: \_\_\_\_\_

Maiden Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Business Phone: \_\_\_\_\_

Degree(s) and Major: \_\_\_\_\_

Year(s): \_\_\_\_\_

Employer: \_\_\_\_\_

Position/Title: \_\_\_\_\_

Birthdate - Month:Day: \_\_\_\_\_ / \_\_\_\_\_

Let us know what you have been up to  
(To be included in the Math Department Newsletter).

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Enclosed is my gift of \$ \_\_\_\_\_ for the 2000 Alumni Fund For Excellence.

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

Enclosed is my check for:

\_\_\_ Mathematical Sciences Endowment Fund

\_\_\_ Math Department Enhancement Fund

\_\_\_ C. H. Gladman Scholarship Fund

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# Student Presentations

This year, as usual, several of our students presented their work to national audiences. Brisa Sanchez had posters at the MIE (Model Institutions for Excellence) conference in Atlanta in April, the annual Joint Mathematics Meeting in Washington, DC, in January, and the SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) meeting in Portland last October. Edith Aguirre also had a poster at the Washington and Portland meetings, and Miwa Hattori had a poster at the Washington meeting. And Yolanda Munoz presented a poster at the Joint Statistical Conference in Indianapolis in August.

# Retirements

The Department of Mathematical Sciences lost a combined 123 years of experience this year, as **Drs. Michael Gray** and **Carl Hall** retired at the end of spring, and **Drs. Kenneth Lopp** and **Eugene Schuster** retired at the end of summer. Dr. Gray is on a phased retirement, and so he will still teach a few more classes. Dr. Hall was awarded the rank of Associate Professor Emeritus.



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