West Texas Middle School Math Partnership

Texas Tech University has received a grant of $6.1m from the National Science Foundation to establish the West Texas Middle School Math Partnership (WTMSMP). WTMSMP is a five year professional enrichment and research project targeting middle school math teachers in West Texas, a geographic area of approximately 84,000 square miles. The ultimate goal of WTMSMP is to improve the math achievement of middle school students in West Texas and provide a model for teacher preparation suitable for use throughout the country.

WTMSMP partners include the mathematics departments at Texas Tech University, Angelo State University, Sul Ross State University, and The University of Texas of the Permian Basin. Also included in the partnership are Texas Education Service Center (ESC) Regions 15, 17 and 18, and the Lubbock Independent School District. Gary Harris (Mathematics and Statistics) is the lead Principal Investigator (PI) for the project and the co-PI’s are Raegan Higgins (Mathematics and Statistics), Tara Stevens (Educational Psychology, College of Education), Zenaida Aguirre (Curriculum and Instruction, College of Education), and Warren Koep (ESC 18 and a TTU alumnus). Math faculty involved with the project are Chris Monico, Magdalena Toda, and Brock Williams from TTU; Paul Swets, Jana Barnard, Ellen Moreland, and Cathy Talley from ASU; David Martin (a TTU alumnus) from SRSU; and Juli Rathael (a TTU alumnus) from UTPB. The ESC regions are represented by Mari Francis Mackey (ESC 15), Karen Marshall (ESC 17), and Warren Koep (ESC 18). The WTMSMP representative from LISD is Pam Summers. Julie Tilton, from TTU, is the project director.

The partnership should directly impact 150 middle school math teachers, with hundreds of future middle school teachers impacted per year by the curriculum developed and used in teacher preparation courses taught by the four partner universities. Current population growth dynamics in Texas suggest that 50,000 students, the majority being Hispanic, in middle grades could eventually be impacted annually in West Texas.

The partnership will produce teacher leaders via a professional enrichment program focused on three fundamental principles: the need for teachers to have a deep understanding of the elementary mathematics taught in the middle grades, the need for teachers to have special pedagogy knowledge required to teach mathematics to diverse student populations, and the need for teachers to employ proven strategies for enhancing the mathematics self-efficacy of diverse student populations.

The Partnership has five major components:

1. Summer courses with graduate credit awarded to inservice teachers, taught on each university campus for teachers in that region.
2. Academic year support through a virtual community of middle school mathematicians teacher practitioners/mentors.
3. Regional theme conferences at each university campus for participating in-service teachers and their administrators/supervisors.
4. Case portfolios and training modules suitable for use in professional development activities for in-service and pre-service teachers throughout the country.

Anyone interested in getting more information about WTMSMP should visit the project website at www.wtmsmp.math.ttu.edu.

INTEGRATED STEM INITIATIVE
ON THE SOUTH PLAINS (ISISP)

In Fall 2009 Texas Tech University was awarded a $1 million grant from NSF for the purpose of integrating all existing STEM projects at TTU. The PI is President Guy Bailey and co-PI’s are Jerry Dwyer and Lawrence Schovanec (Math & Stat), Jaclyn Canas (TIEHH), and Juan Munoz (Vice-President). This funding facilitated the appointment of Dr. Dwyer as Coordinator of STEM Outreach and as a result he relinquishes his role on several other funded programs. In addition, Mr. Levi Johnson (Math & Stat graduate student) has been hired as Assistant Coordinator of STEM Outreach. This grant enables a renewed focus on recruiting and mentoring of STEM students and an enhancement of the summer math academies and math clubs.

Gary Harris (TTU) conversing with Pam Summers (LISD) and Linda Rowntree (Region 17) at the WTMSMP ceremonies.
Change . . . Just as the world we live in has been changing (some good, some less good), the department has been changing also. There are new faces, some of whom will be highlighted in this newsletter, and we have parted with some of our long-time colleagues. Since the last edition of this newsletter, Ali Amir-Moez (1965-1998), W. P. Dayawansa (1996-2006), Bill Gustafson (1976-2003) have all passed away. Endowments honoring Ali Amir-Moez and W.P. Dayawansa have been created to remember them and their contributions to the department.

Positive changes within the department are represented by the creation of new programs to facilitate the development of our students. Those programmatic changes include a new accelerated bachelors-to-masters degree, which was introduced to encourage our best students to pursue graduate studies at Texas Tech and enable those students to complete both their bachelors and masters degrees in five years. Also, a cross disciplinary actuarial sciences minor has been created (hosted within the department) to provide a forum at Texas Tech for students to prepare professionally for careers as actuaries. Much of the ground work and development of these programmatic endeavors resulted from the energies and efforts of some of our younger faculty.

We have experienced a significant increase in funding for supporting departmental outreach efforts. The foci of these programs range from outreach to junior high and high-school students, to scholarship support for undergraduates in mathematics and in mathematics/science education, to support for graduate student engagement in mathematics/science educational program development, to professional development initiatives and programs for area and regional middle school teachers. Many of these programs are detailed by their authors in targeted articles in this newsletter.

Changes within the university have impacted the department in a variety of ways. Most obviously, Lawrence Schovanec, who was the former Chair of the department, is currently serving as the Interim Dean of the College of Arts & Sciences. (Jane Winer, the former, long-time Dean of the College of Arts & Sciences, who provided unwavering support for the department, fills now a role as a Special Assistant to the President.) In less obvious ways, but with equally significant long-term impact, the university President, Guy Bailey, is working towards an agenda to move Texas Tech forward towards a tier-one status. Less pleasant (at times) changes have revolved around the university’s transition to a new software platform, Banner, for managing student, personnel and fiscal records. At many given times (and at many given places across campus), Banner has been a four-letter word.

The department is changing in terms of its physical infrastructure. The department employs two full-time IT support staff to maintain the servers and the hundreds of workstations supporting the department’s research and teaching missions. While we have not disposed of chalk and blackboards (yet), we are seriously engaged in moving towards providing state-of-the-art multimedia presentation equipment in our classrooms. We are even transitioning away from the old wooden desks which you may (not fondly) remember.

We appreciate your interests in the changes within the department. We would welcome feedback and input from you. Best wishes for your continued success as you (undoubtedly) engage with change . . .

From the Chair

Kent Pearce
G K - 1 2 : B u i l d i n g  B r i d g e s
Integrating Math, Science, and Engineering Education on the South Plains.

This program prepares forty (eight per year) experienced doctoral-level STEM (Science, Technology, Engineering, and Mathematics) graduate students and forty (eight per year) secondary STEM teachers to work in an interdisciplinary environment by developing novel Mathematics, Engineering, and Science Bridge Quartets, where a GK-12 Science or Engineering Fellow and a GK-12 Mathematics Fellow partners with corresponding in-service science and mathematics teachers. The cohorts form during a series of summer institutes, where the research knowledge of the Fellows is disseminated to the teachers, training in pedagogy and learning theory occurs for the Fellows, and integrated STEM curriculum modules are developed. The focus is to enrich the education of STEM doctoral students, to develop a novel curricular approach to mathematics and science instruction, to build integrated math/science communities within and between higher education and K-12 institutions, and to enhance the mathematics and science content knowledge of teacher participants. Collaboration among STEM (Math, Chemistry, Physics, and Engineering) and Education faculty is central to this program as well as the integration of math and science at the K-12 level. The PI on this NSF funded program is Dominick Casadonte (Chemistry), and the co-PI’s are Mary Baker (Electrical Engineering) and Jennifer Wilhelm (Curriculum & Instruction). Mathematics & Statistics participation includes Brock Williams (co-PI) and Jerry Dwyer (senior personnel). As of May 2009 Math & Stat graduate students Ron Anderson, Jennifer Hortman, Val Laurushchyk, Kaleb Mckale, James Valles, and James Woodley have been chosen as GK-12 Fellows.

Texas Tech Noyce Scholars (TTNS)

The TTNS Program has just begun at Texas Tech University. Each year eight upper level undergraduate students from among Mathematics and Chemistry majors will be recruited for a two-year long K-12 experience. In addition eight lower level undergraduates will participate in a summer K-12 experience designed to attract them to the world of K-12 teaching. Over the five-year life of the program, 32 students will each receive stipends of $20,000. Students will take courses related to K-12 education and will spend 10 hours per week in K-12 schools. Students will be mentored by faculty and teachers and will be provided with long term support structures to ensure their continued success as teachers. Scholarship recipients will teach for four years following completion of their certification in high needs schools in Lubbock Independent School District (LISD) in West Texas, a district with large populations of underrepresented students. This is a multi-disciplinary program with faculty members from the Department of Mathematics & Statistics (Jerry Dwyer – PI, Lawrence Schovanec – co-PI, and Monty Strauss – co-PI, Victoria Howle – senior personnel) and the Department of Chemistry & Biochemistry (Dominick Casadonte – co-PI) taking responsibility for the selection, mentoring, and guidance of students. Intensive mentoring will be offered with assistance from CISER (Center for the Integration of Science Education and Research, Susan Talkmmit – senior personnel) and the program will be evaluated by Tara Stevens (co-PI, College of Education). Education officials from LISD (Pam Summers) will supervise the placement and retention of the new teachers. The TTNS Program is funded by the National Science Foundation, in the amount of $571,000, with the bulk of the funding used to directly assist the students. The program directors as well as several other faculty mentors in the department are voluntarily donating time.

South Plains Math Scholars (SPMS)

In this program academically talented students from low-income families receive scholarships for undergraduate study leading to a degree in mathematics. Over the four-year life of the program, approximately 20 students each receive scholarships worth up to $10,000 per year. Participants are chosen with assistance from K-12 faculty and Texas Tech University admissions officers. Students receive intensive individual academic mentoring and form part of a supportive cohort with opportunities for undergraduate research. Faculty members from the Department of Mathematics and Statistics, with assistance from the College of Human Sciences, direct the SPMS, taking responsibility for the selection, evaluation, and guidance of students. Campus support offices such as financial aid, disability, counselling, and career advising are all available to the scholars. The primary objectives of the SPMS are to increase the population of students from low-income families at TTU, to improve retention levels for mathematics majors, and to disseminate information regarding methods of improving retention. Twelve SPMS scholars were chosen in 2008 and eight scholars for the Fall 2009. The project PI is Monty Strauss and co-PI’s are Kent Pearce, Magdalena Toda, and Brock Williams, as well as Michael O’Boyle from the Department of Human Development and Family Studies. The SPMS program is funded by the National Science Foundation, in the amount of $571,000, with the bulk of the funding used to directly assist the students. The program directors as well as several other faculty mentors in the department are voluntarily donating time.

CURRICULUM ADDITIONS

Bachelors-to-Masters

In the Fall of 2008 the Department of Mathematics and Statistics inaugurated a new accelerated Bachelors-Masters program that can be completed within a five year period. The goal of the program is to encourage academically superior students to initiate or to complete their graduate education at Texas Tech University. This program enables our best undergraduates to complete their Bachelor's degree in four years, and complete a Master's degree in one year.

It is a 150 hour program, of which the Bachelor's degree requires 120 credit hours and the Master's 30 credit hours. The three possibilities of this program are; B.S./M.S., B.A./M.A. and B.A./M.S.

The M.S degree could be either in Mathematics or Statistics. In the Summer of 2009, Kendall Gillies became the first student to graduate from this program. She is continuing on for a PhD at Texas Tech University.
LUAN HOANG

Dr. Hoang received his B.S. degrees in Mathematics and Information Technology from National University, Hochiminh City, Vietnam; his M.A. degree from Arizona State University; and his Ph.D. degree from Texas A&M University. He was a Duham Jackson Visiting Assistant Professor at the School of Mathematics at the University of Minnesota, before joining our department in the Fall of 2008. His research consists of partial differential equations, dynamical systems and fluid dynamics, and their applications in meteorology and oceanography. Since coming here, he has been collaborating with a number of faculty members in a research program on non-linear flows in porous media. He also co-organizes the applied mathematics seminars and the 2009 Red Raider Mini-Symposium. After one year, he remarks: “The faculty and staff welcomed me warmly, and have been very supportive ever since. I am pleased that I blend right into the department's research, teaching and other activities. My past year at the department has been very pleasant and valuable.”

VICTORIA HOWLE

Dr. Howle joined the faculty as an Assistant Professor in 2007. Her research is in applied mathematics with a focus on numerical analysis and numerical linear algebra in particular. One main research interest has been in developing specialized pre-conditioners for recalcitrant applications where standard methods often fail. This work has included developing physics-based pre-conditioners for incompressible fluid flow problems and developing iterative methods and pre-conditioners for the solution of highly ill-conditioned systems that arise in faulted electrical power networks. Her research has also included work in fault-tolerant linear algebra, optimization, and the eigenvalues of musical instruments. Dr. Howle received a B.A. in English Literature from Rutgers University in 1988. After working for a number of years as a technical writer at several software companies, she returned to school to study mathematics. She received her M.S. in 1998 and Ph.D. in 2001 from the Center for Applied Mathematics at Cornell University. Before coming to Texas Tech, she worked for seven years as a research mathematician in the Computational Science and Mathematics Research Department of Sandia National Laboratories in Livermore, California. Dr. Howle came to Texas Tech in large part because of the growing research group in computational mathematics. Since arriving she has enjoyed fruitful collaborations with other members of the department, especially Dr. Robert Kirby and Dr. Kevin Long. She has also found teaching at Tech a rewarding experience, and particularly enjoys working with graduate students and advanced undergraduates on individual research projects. She is currently funded through a NSF grant with Drs. Kirby and Long on research on the automation of software development for advanced analysis and solver algorithms and by several grants in mathematics outreach. Since coming to Tech, Dr. Howle has joined Dr. Jerry Dwyer and others on a number of outreach projects designed to increase interest in mathematics among underrepresented students. This has included a successful summer math academy for high school students funded through the MAA Tensor SUMMA program in 2008 and 2009. She has also enjoyed working with our undergraduate math majors as the current faculty representative for the TTU student chapter of the Mathematical Association of America. Dr. Howle is married to one of our other faculty members, Dr. Kevin Long. They have enjoyed following each other to various career opportunities over the years and most recently are pleased to have their career paths bring them to Texas Tech. They have six month old twins, Charlotte and Russell.

SOPHIA JANG

Dr. Jang received her B.S. degree in mathematics from Providence University in Taiwan and her M.S. and Ph.D. degrees from Texas Tech University. She was a faculty member at the University of Louisiana at Lafayette before returning to Texas Tech in Fall of 2008. Dr. Jang's main research area is mathematical biology with emphasis in population biology and ecology. Currently she collaborates with a faculty member in the Department of Biology in developing discrete time mathematical models to test hypotheses on the stock-recruitment theory of red snapper population in the Gulf of Mexico. Habitat fragmentation due to human activities can decrease population levels which may cause population extinction in some species. Dr. Jang also uses continuous time models to study the impact of Allee effects on population interaction.

KEVIN LONG

Kevin's research is in computational applied mathematics: the art of simulating the behavior of real-world phenomena accurately and efficiently through computer calculations. His work includes devising mathematical models for problems in science and engineering, development of fast algorithms for solving the equations arising in a model, automated methods for validation and verification of computational simulation, and in the application of discrete mathematics to the design of self-assembling software for numerical simulation. Together with TTU professors Robert Kirby and Victoria Howle, Kevin is funded by the NSF for research on the automation of software development for advanced analysis and solver algorithms. Together with collaborators at the University of Southern California, Columbia University, MIT, Johns Hopkins University, and Sandia National Laboratories, Kevin is funded by the NSF and the US Department of Energy for research on the quantification of uncertainty in multiscale simulations in chemistry, materials science, and environmental engineering. Kevin has a B.S. in astronomy from the University of Maryland and a Ph.D. in theoretical astrophysics from Princeton University. He worked as a postdoc at the University of Massachusetts and as an Assistant Professor at SUNY at Brockport, until the need to coordinate with his wife's career plans led him to seek a more easily portable line of work than astrophysics. He worked for three years at an engineering firm doing software development for computational fluid dynamics codes, and then spent nine years in the Computational Sciences and Mathematics Research Department at Sandia National Labo-
minor. Two of these courses are required, and provide coverage of these various departments, of which they must take 6 in order to result in the approval of the minor in record time. For more information, please visit the website at www.math.ttu.edu/actuarial.

Actuarial Science (AS) is an interdisciplinary field combining knowledge and methods from statistics, mathematics, finance, and economics. The core function of an actuary's job is to assess and quantify financial or economic risk. AS is increasingly viewed as a desirable career by students in the mathematical sciences. The high starting salaries, which reflect the rigorous and lengthy training demanded of the prospective actuary, are a result of the interest in computational statistics. From 2000-2007 he was an Assistant Professor at the University of Florida, where he developed important collaborative ties with the Financial Engineering and Risk Management Lab. This was a natural complement to his time series expertise, and econometric modeling has since been one of his main research areas. This experience was instrumental in helping develop TTU's newly-created undergraduate minor in actuarial science. Another main thrust of his research is saddlepoint approximations. Together with colleague Rob Paige, he has pioneered a method to improve small sample inference in quadratic estimating equations. This work is currently being funded by the National Security Agency. Alex also enjoys "wearing his applied statistician's hat", and helping further research in other fields. Some of his varied projects have involved developing statistical models to aid the discovery of improved metal alloys, and models for fine-tuning patient-specific dosage in radiation therapy. In 2003-2004 he was the primary statistical consultant on a reliability project with The Boeing Company funded by DARPA, and in 2005 was contracted by Encision, Inc., for a reliability study of medical devices. Part of his attraction to TTU is that he feels this applied facet of his work will be more valued in a university that is aspiring to be research-intensive, where statistical expertise will be increasingly sought after. In this respect he feels he can contribute in helping further develop our Statistical Consulting Lab. As resources and demand grows he foresees this becoming an important service, helping not only researchers in other fields, but also our own students as they learn to apply statistics by staffing the Lab and attending to walk-in clients. These experiences could also eventually translate into classroom credit for a statistical consulting course.

Actuarial Science Minor

CURRICULUM ADDITIONS

Actuarial Science (AS) is an interdisciplinary field combining knowledge and methods from statistics, mathematics, finance, and economics. The core function of an actuary's job is to assess and quantify financial or economic risk. AS is increasingly viewed as a desirable career by students in the mathematical sciences. The high starting salaries, which reflect the rigorous and lengthy training demanded of the prospective actuary, are part of the reason for this interest. This training requires one to pass a series of established society exams, leading to the two major milestones of Associateship and Fellowship.

Due to popular demand, and in consultation with the departments of Finance, Information Systems & Quantitative Sciences, Economics, and Agricultural & Applied Economics, we developed over the past academic year an undergraduate minor in AS. The result is that students have a list of approved courses in these various departments, of which they must take 6 in order to minor. Two of these courses are required, and provide coverage of the material necessary to pass the first two exams. The program is designed to provide students with the minimum preparation necessary to secure an entry-level job. It was necessary to offer only one new course in order to make this a reality; "Quantitative Theory of Interest" (MATH 2356), premiering this spring, is being taught by Lih-Ing Roeger.

The creation of the minor was spearheaded by Monty Strauss and Ram Iyer. Alex Trindade, aided by Lih-Ing Roeger, chaired the committee that sought to gather input from the various departments that should naturally be involved in such an interdisciplinary program. The combined administrative experience of Monty and Ram, Alex's knowledge of the field of AS, and Lih-Ing's development of a syllabus for the new course MATH 2356, resulted in the approval of the minor in record time. For more information, please visit the website at www.math.ttu.edu/actuary.
Faculty News  Celebrating Promotions

**LINDA ALLEN**

On 25 February 2010, Linda Allen was named as a Horn Professor, the highest honor a faculty member can receive from Texas Tech University. “Horn Professors represent the very best among our faculty,” said President Guy Bailey. “These individuals are recognized for their attainment of national and international distinction and for their research or other scholarly or creative achievements. We value these men and women for their scholarship and their many contributions to Texas Tech. They are a true testament to the quality of our academics.”

“Faculty members who are named Horn Professors are distinguished in their teaching, research and service,” said Chancellor Kent Hance. “These professors are honored for their academic achievements and dedication to the university. We are fortunate to have such committed individuals at Texas Tech and are proud to commend them with our highest honor.”

The Horn Professorship was established in 1966 to recognize scholarly achievement and outstanding service to Texas Tech. The honor is named for Texas Tech’s first president, Paul Whitfield Horn. Since its inception, 76 members of the faculty have been appointed Horn Professors and 35 remain on faculty.

“This is not a designation that is awarded lightly,” said Provost Bob Smith. “While being recognized primarily for exceptional and sustained research or other creative and scholarly achievement, typically Horn professors are truly integrated scholars, with abilities to meld the tripartite mission of teaching, research and service.”

Linda Allen joined Texas Tech in 1985. She has won the Barnie E. Rushing Jr. Faculty Distinguished Research Award, the Graduate Professor of the Year and Outstanding Faculty Mentor Awards. She serves on numerous editorial boards of professional journals and has been published widely. She earned her bachelor’s degree from College of St. Scholastica in Duluth, Minn., and her master’s and doctoral degrees from the University of Tennessee.

**JERRY DWYER**

Dr. Dwyer has a B.A. in mathematical sciences, an M.S. in Computer Science, and a Ph.D. in applied mathematics, all from University College Cork, Ireland. His dissertation work was in numerical methods for PDE’s, with applications in mechanics.

Dr. Dwyer worked for many years in computational mechanics related to fracture, composite materials and glaciology. In recent years he has focused his work on issues of math outreach and developed a range of K-12 outreach projects at the University of Colorado and the University of Tennessee before arriving at Texas Tech as an Assistant Professor in Fall 2003. In the Spring of 2009 he has been granted tenure and a promotion to Associate Professor. He now develops service learning programs for students and workshops for teachers. He has had numerous grants from NSF and other foundations, related to educational outreach. His main research interests in mathematics are in complex dynamics. In educational outreach he is interested in evaluating teaching effectiveness and programs designed to attract underrepresented groups to math and science. He is currently a director or a co-director of several projects including the The Joy of Thinking Math Clubs, The Summer Math Academy, the South Plains Math Scholars, The Texas Tech Noyce Scholars Program, the TexPREP Summer Program, the GK-12 Bridges Program, the Math-Science (MS) Program, The West Texas Middle School Math Partnership, and the Integrated STEM Initiative on the South Plains (ISISP).

Dr. Dwyer is a competitive runner and coaches several marathon runners. He is involved in volunteer work with his church and has visited Africa a number of times to assist in educational development work.

**MARA NEUSEL**

Dr. Neusel received her doctoral degree from the University of Göttingen, Germany in 1992 where she did research in Geometric Topology. After that her research interests moved to Invariant Theory (of finite groups). In 2001 she was awarded the venia legendi also from the University of Göttingen. Before joining the Mathematics Department of Texas Tech University as Associate Professor, she held positions at the University of Minnesota, Notre Dame University, Yale University, and the Universities of Magdeburg, Göttingen, and Kassel (all in Germany). In addition she held visiting appointments at numerous universities in 10 countries and 4 continents. She is widely respected as a leader in her field and often invited to conferences and workshops all over the world. She is the author of many research papers and two books, one of which received the Texas Tech Presidential Book Award (second place) in April 2009. Moreover, she organized a Red Raider Mini Symposium on Invariant Theory in 2004, brought the Spring Central AMS Sectional Meeting 2005 to Texas Tech and founded the Emmy Noether Mathematics High School Day for women students and their teachers in 2003.

She was granted promotion to Professor in the Spring 2009. She will be on leave during the Fall of 2009, visiting her mathematical home Yale University.
CHRIS MONICO
Originally from New Jersey, Dr. Monico received his B.S. from Monmouth University in 1996 and Ph.D. from the University of Notre Dame in 2002. His research has primarily been in the areas of Cryptography and Number Theory, but with occasional projects in other areas as well. Recently, he co-directed a EE Ph.D. student in digital circuit testing and has taken up an interest in several graph-theoretic problems together with Carl Seaquist. He very much enjoys being here at Texas Tech and is elated to have been granted tenure and promotion to Associate Professor.

ALEX SOLYNIN
Alexander Solynin received his diploma, with honors, in Mathematics in 1980 from the Kuban State University in Krasnodar, Russia. In 1985 he obtained his Ph.D.. His PhD dissertation was written at the Kuban State University, while the official defense occurred at the Institute of Applied Mathematics & Mechanics, at the Academy of Sciences of Ukraine in Donetsk. From 1983 to 1990 he was employed, first as an Assistant Professor and then as an Associate Professor, at the Kuban State University in Krasnodar. In 1990 Dr. Solynin joined the Steklov Institute of Mathematics in St. Petersburg, Russia, where he was a Senior Research Fellow from 1993 to 2004. In the Fall of 2000, Alex came to TTU as a Visiting Professor for two years. In the Fall of 2004 he accepted a position as an Associate Professor at TTU. He received a promotion to Professor in the Spring of 2009.

Dr. Solynin’s research interests include complex analysis, potential theory, and qualitative theory of PDE’s. In particular, he enjoys working on extremal problems in geometric function theory and mathematical physics. Problems with highly symmetric conjectured extremal configurations are of special interest.

In his 70 publications Dr. Solynin has developed new approaches to symmetrization, quadratic differentials, variational and parametric methods, and applied them to solve several extremal problems raised by prominent mathematicians.

Funding News (cont)

MIDDLE SCHOOL MATH AND SCIENCE (MS)^2: UNDERSTANDING BY DESIGN

The College of Education at Texas Tech University, collaborating with the Colleges of Arts and Sciences and Engineering, has just commenced the Middle School Math and Science (MS)^2 Program. This master's degree program will provide opportunities for math and science teachers to deepen their understanding of STEM content and pedagogical content knowledge, and to create meaningful connections between STEM disciplines making content relevant to a diverse population. This program is funded by the Greater Texas Foundation and will involve recruitment of 100 middle school math and science teachers from across the entire state of Texas. The collaborative efforts of faculty from seven different STEM departments were instrumental in securing $3 million in funding for this five year initiative. The program's PI is Jennifer Wilhelm (Curriculum & Instruction) and the Department of Mathematics & Statistics is represented by co-PI, Brock Williams and curriculum developers Victoria Howle and Raegan Higgins.

Outreach (cont)

SUMMER MATH ACADEMY

The Summer Math Academy (TTUSuMaC), supported by the American Mathematical Society Epsilon fund and the Mathematical Association of America (MAA) Tensor-Summa fund, is a two to three-week program for talented high school students and their teachers. It has offered advanced math courses followed by an intense research experience for each student. The focus is on computational mathematics, and a major objective is to create enthusiasm for mathematics and its applications among the participants. This program is modelled on similar programs nationwide that have been successful in attracting talented students into mathematical studies. It serves the outreach mission of the department very well and is notable for the high number of faculty who volunteer their time to participate. The program has been directed by faculty members Jerry Dwyer, Brock Williams, Victoria Howle, and Padmanabhan Seshaiyer with assistance from Dr. Tara Stevens from the Department of Educational Psychology. Texas Tech University has hosted the program on its campus from 2004 to 2008, with approximately 45 students participating in that time. In 2008 the program was extended to two rural locations and a residential program at TTU was funded by the Texas Workforce Commission in 2009.
The 39th Meeting of the Texas Geometry and Topology Conference was held February 22-24, 2008, at Texas Tech. There were 26 participants from all over the world. The eight talks were:

- Superposition Formulas for Differential Systems by Ian Anderson, Utah State University
- Compactness of Conformally Compact Einstein Manifolds of Dimension 3+1 by Sun-Yung Alice Chang, Princeton University
- Causality and Linking in Spacetimes by Vladimir Chernov, Dartmouth College
- Adiabatic Limits and Morse Decomposition by Richard Melrose, MIT
- Theta Functions and Isospectral Manifolds by Emma Previato, Boston University
- Desingularizing Compact Lie Group Actions by Ken Richardson, TCU
- Rigidity of Projective Homogeneous Varieties by Collen Robles, Texas A&M
- Quantizations of Character Varieties and Knot Theory by Adam Sikora, SUNY Buffalo

The organizers were Lance Drager, Razvan Gelca, Jeffrey Lee, and Magdalena Toda. The conference was funded by the NSF, Texas Tech University, the Department of Mathematics and Statistics, Horn Professor Clyde Martin, and Brooks Regents Professor Bijoy Ghosh.

The Texas Geometry and Topology Conference has met twice yearly since 1989 and has become an institution in the Southwest. The Conference is designed to bring mathematicians and students from Texas and surrounding states and nationally recognized researchers together to share mathematics.

The conference series is funded by the NSF and a consortium of Texas Universities. Texas Tech joined the consortium in 1999. The Conference rotates among Rice University, Texas A&M University, Texas Christian University, Tech Tech University, the University of Houston, and the University of Texas, Austin.

The next meeting of the conference at Texas Tech will be in the Spring of 2011. For more information on the Conference and upcoming meetings, go to www.math.tamu.edu/~tgtc/archive.
A mini-symposium entitled *Non-linear Analysis, PDEs and Applications* was held on October 29–31, 2009 at Texas Tech University. This was the 9th edition of the Annual Red Raider Mini-Symposium organized by the Department of Mathematics and Statistics at Texas Tech University. The symposium featured distinguished speakers, early career speakers and other participants from different states, including graduate students.

The event was funded mainly by Dr. Frits Ruymgaart, Paul Whitfield Horn Professor in the Department of Mathematics and Statistics at Texas Tech University, and organized by Eugenio Aulisa, Luan Hoang, Victoria Howle, Akif Ibragimov, Robert Kirby and Magdalena Toda. The symposium focused on multidisciplinary research connecting several scientific fields, such as non-linear mathematical analysis, mathematical physics, and contemporary topics in engineering and technology. This type of research involves a variety of techniques and methods from nonlinear PDE, real analysis and geometry, as well as advanced numerical methods. The goals of the symposium included: a). enhancing the interactions among these areas of research; b). opening up new collaboration opportunities between participants; c). increasing the visibility and nationwide recognition of the Mathematics and Statistics Department at Texas Tech University.

The event brought together several outstanding scholars who are currently making extensive contributions to their research fields, as well as many early career mathematicians and promising young scientists. The lectures exposed the audience to new avenues of research and engaged them into interesting debates. Lectures were presented by five distinguished speakers: Susanne Brenner, Max Gunzburger, Alex Mahalov, Vladimir Sverak, and Daniel Tataru, and by six early career speakers, namely Matthew Balhoff, Yuliya Gorb, Nam Le, Hoai-Minh Nguyen, Denis Ridzal and Shawn Walker.

The lectures were delivered on campus, from Thursday afternoon to Saturday morning. Sufficient time for informal discussion was allotted between and after talks. To further this goal, we organized several social activities, in order to give all participants the opportunity to interact and discuss in an informal atmosphere. Among these activities, we organized a reception on Thursday afternoon, a banquet on Friday evening, and a social outing on Saturday afternoon, consisting of a picnic and hiking trip to Palo Duro Canyon State Park.

The feedback we received from most participants, during and especially after the conference, confirmed our belief that the conference was a success in every aspect.
The 36th Annual Mathematics Awards Banquet was held Tuesday, April 21, 2009 at the McInturff Center. Over 200 students, alumni, faculty, families, and retired faculty were in attendance to honor both faculty and students. Entertainment was provided in advance by pianist and professor Dr. David Weinberg.

Faculty honored included Dr. Roger Barnard for his 35 years of service and Dr. Harold Bennett for his 40 years at Texas Tech. Several student organizations also honored professors. The graduate student chapter of Society for Industrial and Applied Mathematics (SIAM) honored Dr. Eugenio Aulisa as the Outstanding Graduate Professor of the Year. The undergraduate student chapter of the Mathematical Association of America (MAA) awarded Dr. Lars Christensen the Outstanding Undergraduate Professor of the Year. The Texas Alpha Chapter of Kappa Mu Epsilon (KME) honored Dr. Monty Strauss as its professor of the Year.

Most of the evening honors were to scholarship recipients. A total of more than $330,000 in scholarships were awarded to graduate and undergraduate students majoring in Mathematics and Statistics.

The scholarship recipients for the 2009-2010 academic year were:

**H. Earl and Countess Fore Archer Scholars**
- Justin Frerich
- Isabell Martinez

**George L. Baldwin Scholars**
- Zev Friedman
- Amy Mullet
- Kenneth Rogers

**Barry M. Goldwater Scholar**
- Aaron Adcock

**Emmett Hazlewood Scholars**
- Darci Barney
- Laurel Beneze
- Kimberly Davis
- Meredith Jackson
- Heather Shelton
- Kimberly Shipley
- Jennifer Tang

**E. Richard Heineman Scholars**
- Marcus Armstrong
- Jarrett Barron
- Braden Courtney
- Bailey Davenport
- Erin Fitzgerald
- Joshua Leeper
- Rebecca Lelko
- Kimberly Lundberg
- Corey Rauscher
- Eric Reyna
- Christine Rice

**Robert A. Moreland Scholars**
- Alexandra Ellis
- Morgan Miller
- Tyler Russell
- Kristine Seaman

**Morrison-Broughton Scholar**
- Jonathan Adams

**‘dub’ Rushing Scholars**
- Kyle Bell
- Kasey Bray
- Ellen Durant

**Monty J. Strauss Honors Scholar**
- Meredith Jackson

**Monty J. Strauss Scholar**
- Brandy Lambert

**South Plains Mathematics/Archer Scholars**
- Marcus Armstrong
- Jarrett Barron
- Bo Bryant
- Bailey Davenport
- Dallas Evertts
- Bailey Hardy
- Jaclyn Hardy
- Colin Hawkins
- Laura Juarez
- Robert Klare
- Erin Kmiec
- Corey Rauscher
- Eric Reyna
- Andrew Rogers
- Ariadne Saldivar
- Sapna Sheth
- Sandy Tang
- Whitney Taylor
- Andrew Vasquez

**Tarwater Family Scholars**
- Dallas Evertts
- Micah Pearce
- Justin Sosa
- Sandy Tang
- Casey Womack

**Derald Walling Scholar**
- Constance Haugneland

**Arts & Sciences Academic Achievement Scholars**
- Darci Barney
- Laurel Beneze
- Ellen Durant
- Alexandra Ellis
- Justin Frerich
- Zev Friedman
- Constance Haugneland

**H.Y. Price Scholars**
- Jarrett Barron
- Laurel Beneze
- Omar Cortez
- Bailey Davenport
- Brandy Lambert
- Corey Rauscher
- Andrew Rogers
- Ariadne Saldivar
- Sapna Sheth
- Jennifer Tang
- Sandy Tang

**Ronald M. Anderson Scholars**
- Elife Dogan
- Mervyn Ekanayake
- Zeynep Kose
- Glenn Lahody
- Erin Skjelstad
- Vadim Tyuryaev
- Ronnie Williams

**AT & T Chancellor’s Fellowships**
- Lidia Bloshanskaya
- Jedidiah Gohlke
- Ashlee Noland

**Benjamin S. Duran Scholar**
- Indika Wickramasinghe

**Gordon Fuller Scholars**
- Krishna Kaphle
- Neslihan Karsli
- Yasemen Kaya
- Wilkum Samaranyake

**Helen Devitt Jones Graduate Fellowships**
- Adem Cakmak
- Penelope Ellis

**John T. White Scholars**
- Emine Celik
- Chen Chen
- Brian Miller
- Alexander Williams

**SIAM Scholars**
- Penelope Ellis
- Anton Kliewer
- Val Laurushchyk

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Students & Faculty at the 2009 Mathematics & Statistics Awards Banquet
There are more than sixty SIAM (Society of Industrial and Applied Mathematics) Student Chapters currently active at one or more colleges or universities nationwide. They ideally involve students and faculty members from different areas. The purpose of each chapter is to generate interest in applied mathematics and computational science by providing students with opportunities to:

- share ideas and enthusiasm with fellow students and faculty;
- explore career opportunities;
- make contacts that will last a lifetime;
- develop leadership skills.

SIAM encourages student participation in interdisciplinary activities between many academic departments, on projects involving mathematics, applied mathematics, statistics, computer science, engineering, economics, physics, and other sciences. The student chapter activities may include discussions on career opportunities in applied math and computational science, lectures given by guest speakers, research projects, graduate level competitions, social functions, and field trips to SIAM sectional meetings.

The 2008-2009, the TTU SIAM Chapter comprises 80 members, both students and faculties, and it has been directed by four officers (Kaleb McKale (President), Jerod Clpton (Vice President), Nicholas Murray (Treasurer), Glenn Lahodny (Secretary)), four chairs (Jennifer Emerson (External Affair Chair), Matthew Lochman (Development Chair), Kendall Gillies (Social Chair), Scottie Wei (Historian)) and one faculty advisor (Eugenio Aulisa).

Many academic events have been organized during this year:

- the SIAM Fall Mini-Symposium. This is a two day event which gives the students the opportunity to learn a little bit more about faculty members and their research.
- the GSRD (Graduate Student Research Day). In this event, Master and PhD students are given the opportunity to present their original research, to an audience of both students and professors, and a chance to practice their oratorical skills in front of the scientific community.
- Colloquium Talks. Five distinguished speakers have been selected from different area of mathematics, computer science and engineering. The invited lecturers were Dr. Clyde Martin (Texas Tech University), Dr. Heidi Thornquist (Sandia National Labs), Dr. Michele Benzi (Emory University), V. Ravi Srinivasan (University of Oklahoma) and Dr. Kumbakonam Rajagopal (Texas A&M University).

Every year, the TTU SIAM chapter awards scholarships to students who excel in their academic studies, as well as in their participation in the SIAM activities. It also finances travel for students presenting their research to national or international conferences. SIAM is also one of the major supporters of the Emmy Noether High School Day.

Three new events have been introduced this year:

- the First Year Orientation Day, organized in August to welcome new graduate students;
- the Prelim Boot Camp, a three day event organized in May to help in the preparation of the PhD degree preliminary examinations;
- active participation in Relay for Life, a fund-raising marathon to help the battle against cancer.

Representatives of the TTU SIAM Chapter participated in the 2008 Annual SIAM meeting in San Diego, and in the 2009 Texas Applied Mathematics Meeting for Students at UT Austin. At the latter meeting, Dr. Raegan Higgins gave a keynote lecture as a representative of our Chapter.

The SIAM Chapter also organized many social events as tailgates, bowling, Thanksgiving luncheon, Halloween party and many others.

The Texas Tech student chapter of the Mathematical Association of America (MAA) continues to provide encouragement in the mathematical sciences as well as social activities for our undergraduate mathematics majors.

The TTU-MAA continues to be active, with students participating in Emmy Noether Day and University Day. Each year the MAA students vote for the Undergraduate Teacher of the Year. Recent recipients have been Dr. Lars Christensen in 2009 and Dr. Jerry Dwyer in 2008. The MAA also provides financial support to our math majors by helping pay for travel to conferences and by providing funds toward graduate school applications or toward the cost of the GRE exams. We also invite guest speakers from different backgrounds so our undergraduate students can learn more about mathematics and career opportunities. This year the MAA sponsored a talk by Dr. Heidi Thornquist of Sandia National Labs who spoke about mathematical and scientific careers at the DOE Labs. The MAA students also enjoy many social events with frequent visits to Main Event for bowling and laser tag, football tailgates at Raidergate, movie nights, and paintball trips.

Club officers for the 2008-2009 academic year were: Ellen Durant, President; Micah Pearce, Vice President; Dave Hathcock, Administrative Assistant; Brandy Lambert, Treasurer; and Darci Barney, Media Specialist. For the 2009-2010 academic year the student elected new officers: Dave Hathcock, President, Brandy Lambert, VicePresident; Jonathan Adams, Administrative Assistant; Micah Pearce, Treasurer; and Ellen Durant, Media Specialist and Senior Advisor.

Since Spring 2008, the new MAA faculty advisor is Dr. Victoria Howle, who replaces the previous advisor, Dr. Chris Monico.
### Degree Recipients

**PHD ‘09**

- May- Charles, Janelle
  - Ekanayake, Amy
  - Kennaugh, C. Todd

- Dec- Al-Hashmi, Sam
  - Banerjee, Chandrani
  - Erwin, Brock
  - He, Bo
  - Lawless, Steven
  - Lu, Jun
  - Ren, Xiaoqiong
  - Zhou, Renke

**PHD ‘08**

- May- Ji, Xiao Yi
- Aug- Pang, Johnny
  - Wesley, Curtis

**MASTERS ’08**

- May- Franks, Laura
  - Ho, Christina
  - Johnson, Elisa
  - Kliwer, Anton
  - Wang, Xiaolin
- Aug- Corriette, Irene
  - Sanghvi, Palak
  - Sun, Shuanglin
- Dec- Adikari, Upeksha
  - Bacon, Jason
  - Casas, Natevidad
  - Chen, Yu
  - Hensley, Nicholas
  - Hollingsworth, Taylor
  - Lopez, Jose
  - Sanchez, Cesar
  - Wichramasinghe, Indika

**PHD ‘07**

- Aug- McGee, Shelly
  - Yan, Ke
- Dec- Cupidon, Jean Rene
  - McGee, Wayne

**MASTERS ’07**

- May- Bulut, Memet
  - Hernandez-Padilla, Wendy
  - Lu, Yonggang
  - Miller, Torill
  - Simsek, Hakan
  - Wang, Jing
- Aug- Badev, Anton
  - Bartlett, Jennifer
  - Flores, Raymond
  - Gunathilaka, Asiri
  - Jordan, Charles Byron
  - McGinnis, Elizabeth White

- Dec- Arizpe, Omar
  - Babanazarov, Bahtiyar

**PHD ‘06**

- May- Bumpus, J’Lee
  - Palamakumbura, Rathnamali
  - Sugathadasa, M. Samanmalee
- Aug- Bandulasiri, Ananda
  - Fernando, Pitipanage Harshini
  - Holsapple, Raymond
  - Hume, Casey
  - Koskodan, Rachel
  - Martin, David
  - McCormack, Robert
  - Navaratna, Menaka
- Dec- Talukder, Mohammed Hanif
  - Wang, Keyi

**MASTERS ’06**

- May- Ekanayake, Dinesh
  - Ferguson, Lauren
  - Ha, Andrew
  - Harrison, Dawn
  - Holder, Daniel
  - Jean, Larry
  - McNeely, Rachelle
  - Parras-Cisneros, Jessica
  - Rasberry, Darrin
  - Sherrod, Sonya
  - Xie, Xianyun
- Aug- Dixit, Atul Abhay
  - Hinojosa, Amanda
  - Kundomal, Chellaram (Kyle)
  - Lawrence, Karen
  - Peterson, Michael
  - Singh, Akashdeep
  - Tate, Kevin
  - Williams, Alexander
  - Xu, Yaji
- Dec- Callaway, Brenton
  - Chen, Rong-Tsung Jason
  - Head, Julia

**PHD ‘05**

- May- Franklin, Scott
  - Willis, Nicholas
- Aug- Khoujmane, Ali
  - Murphy, Eric
  - Swim, Edward
- Dec- Chen, Baili

**MASTERS ’05**

- May- Baghdati, Marinos
  - Chenalt, Leah C.
  - Cosner, Rebecca
  - Fowler, Jacqueline
  - Froman, Jason
  - Hanlon, Brett
  - Hayes, James
  - Hough, Ben
  - Peterson, Kimberly
  - Stewart, David
  - Walker, Matthew
  - Williams, Lina
  - Zhang, Lan
- Aug- Ahedor, Gideon Yao
  - Dixit, Atul Abhay
  - Hinojosa, Amanda
  - Kundomal, Chellaram (Kyle)
  - Lawrence, Karen
  - Peterson, Michael
  - Singh, Akashdeep
  - Tate, Kevin
  - Williams, Alexander
  - Xu, Yaji
- Dec- Callaway, Brenton
  - Chen, Rong-Tsung Jason
  - Head, Julia
Ed Allen recently had a second graduate textbook published, *Classical and Modern Numerical Analysis: Theory, Methods and Practice* by CRC Press.

Linda Allen gave an invited series of lectures at the National Tsing Hua University, Taiwan (Aug 2008), and was a plenary speaker at the China-Canada Colloquium on Modeling Infectious Diseases held at Xi’an Jiaotong University, China in September 2009.

Eugenio Aulisa’s research activity has been funded with two NSF-DMS grants: “Mini-Symposium on Nonlinear Analysis, PDE, and Applications” and “Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications” in 2009. He is one of the organizers of the 2009 Red Raider Mini-Symposium on Non-linear analysis, PDEs and Applications, and the 2008 & 2009 Emmy Noether Mathematics High School Day.

Roger Barnard gave an invited talk “Properties of Hypergeometric Functions Applied to Finance” and chaired a session at the Special Session of AMS Canadian Math Society meeting in Vancouver, Canada (Oct 2008). In June 2009 he gave another invited talk “A Turan-Type Inequality for the Hummer Function Arising in Economics” and chaired a session at the CMFT 2009 Conference in Ankara, Turkey. In October 2009 he organized a special session “Contemporary Complex and Special Function Theory” at the Regional AMS meeting at Baylor University.

Lars Christensen was the main lecturer at the “Summer School on Homological Algebra” at Nanjing University in China in July 2008. He delivered 8 hour-long lectures to an audience of 15 graduate students and 5 postdoctoral scholars.

Jerry Dwyer organized and chaired a panel discussion on Math Placement Testing at the AMS-MAA Joint Mathematics Meetings in Washington, D.C.

Razvan Gelea was awarded a NSF grant for $15,000 to support the annual Red Raider Mini-Symposium.


Gary Harris has been elected as Level III Director on the executive board of Texas Section of Mathematical Association of America. A three year term beginning January 2009.

Raegan Higgins, a Visiting Assistant Professor, presented research at the National Association of Mathematics Granville-Browne-Haynes Session of Presentations by Recent Doctoral Recipients in the Mathematical Sciences. The title of her talk was “Oscillation Theory of Dynamic Equations on Time Scales”. She also served on a panel entitled “What I wish I had known or studied before going to graduate school”. The panel was sponsored by the American Mathematical Society.

Ram Iyer was a guest editor of a special issue of the IEEE Control Systems Magazine on Soil-Water Hysteresis (February 2009).

Lourdes Juan was a member of the Mathematical Sciences Research Institute in Berkeley, California in March 2008. That June she was a speaker at the Workshop on Representation Theory, Geometry and Combinatorics, at the University of California at Berkeley. In April of 2009, she gave a colloquium at the University of Oklahoma. In May she gave a talk at the Satellite Workshop on Algebraic Theory of Difference Equations, in association with the program Discrete Integrable Systems at the Newton Institute in Cambridge, University of Leeds, UK. In Fall 2009, she spent a sabbatical at the University of Pennsylvania, and during that period gave a series of invited lectures at various institutions, including Yale, Rutgers, The Center for Communications Research in Princeton, CUNY, and Penn University.

Robert Kirby is continuing work on an NSF-funded project entitled “Automated intrusive algorithms for numerical simulation of PDE via software-based Frechet differentiation” that uses techniques from mathematics and computer science to automatically generate powerful numerical algorithms from a high-level user description.

Arne Ledet gave a presentation at the Special Session on Brauer Groups, Quadratic Forms, Algebraic Groups and Lie Algebras in April 2009. The special session was held at a sectional meeting of the American Mathematical Society (at North Carolina State University). His presentation was titled “Spin_7 as a differential Galois group”.

Jeff Lee recently published a graduate level textbook, *Manifolds and Differential Geometry* by AMS.

Wayne Lewis is a co-organizer of the Spring Topology and Dynamical Systems Conference 2010.

Clyde Martin has been appointed an Associate Editor of the Electronic Journal of Statistics.

Mara Neusel gave a short course on “Invariant Theory” at the Hacettepe University in Ankara, Turkey in June 2009.

Rob Paige presented a talk at the 2009 Joint Statistical Meetings in Washington, D.C.

Lin-Ing Roeger was a contributed speaker at the SIAM Conference on Applications of Dynamical Systems in Snowbird, Utah. She was an invited speaker at the Differential Equation and Application in Ecology and Epidemiology Conference at Purdue University; the Fifth World Congress of Nonlinear Analysts in Orlando, Florida; and the AIMS Seventh International Conference on Dynamical Systems, Differential Equations and Applications in Arlington, Texas.

Byungtae Seo gave a talk at the First IMS Asia Pacific Rim Meeting in Seoul, Korea.

Alex Solynin gave an invited talk on “Some recent results in classical complex analysis” and chaired a session at the IV International Conference on Dynamical Systems in Nahariya, Israel in May 2009.

Monty Strauss became the Director of Undergraduate Programs, in addition to chairing the Department’s Scholarship Committee. The department takes pride in advising undergraduate majors and minors, and awards more than $150,000 in annual scholarships, in addition to nominating students for scholarships provided by other sources.

Magdalena Toda received the President’s Award for Excellence in Teaching in April of 2008. Since 2006 she has been responsible for organizing the Emmy Noether Mathematics High School Day. Since 2009 she has been a co-PI on an NSF-DMS grant, and a co-PI on an NSF-STEM grant since the Fall of 2008.

Alex Trindade presented a talk and chaired a session at a time series conference in honor of Manfred Deistler in Vienna, Austria.

Brock Williams was an invited speaker at the Workshop on Riemann-Hilbert Problems, Circle Packing, and Conformal Geometry in Freiberg, Germany. He also gave a talk at the Computational Methods and Function Theory Meeting in Ankara, Turkey.
**TexPREP Summer 2008-2009**

TexPREP-Lubbock (Texas Pre-Freshman Engineering Program) is a summer program for seventh through eleventh grade students that has been sponsored by the Texas Tech University Department of Mathematics and Statistics for the past twenty-four years. The program began at UTSA in 1979, and there are several other TexPREP programs in Texas.

TexPREP is a challenging program to help students develop life-long learning skills. They gain the intellectual skills needed to succeed in high school, college, and careers, and the social skills needed to work cooperatively with others. Almost all go on to college. Three of our former PREP students are now attending Texas Tech, and majoring in math!

The program promotes engineering, mathematics, and science among local junior high and high school students. We especially recruit (but are not limited to) students who are minorities or are female (because they have traditionally been underrepresented in these areas). There is no tuition fee, so that students from diverse cultural and economic backgrounds can attend. In 2008 and 2009, almost half of our first-year students came from families where neither parent had a college degree. We have about 100 students each year, in four levels.

Students attend for up to four years. The regular classes include mathematical logic, topics in algebra, pre-calculus, calculus, computer science and programming, introduction to engineering, robotics, science (biology, chemistry, and physics), SAT preparation, skill builders (leadership and social skills), and university readiness (career awareness and preparation for college). There are special classes (such as cryptography, ecology, and graph theory) offered when teachers are available. The program integrates course material through special projects such as robots, mousetrap cars, airplanes, egg drop devices, rockets, and bridges. The curriculum and projects challenge students to develop their thinking skills and to apply mathematical ideas.

There are local and out-of-town trips. The PREP 1 students visit the Windmill Museum and the Silent Wings Museum each summer. They learn about the design aspects and history of windmills and World War II gliders. The PREP 2 students visit the Xcel Energy Plant, and take in-depth tours of several engineering departments at Tech to see what researchers are investigating. In 2008, the PREP 3 and 4 students took a two-day field trip to Paragon Innovations (an engineering firm in Dallas), and the Science Museum in Fort Worth. At Paragon, they learned about their current projects, and about what they needed to do to become successful engineers. In 2009, they visited McDonald Observatory near Fort Davis, and the CAF Museum in Midland.

The TexPREP staff includes Director Jerry Dwyer, Assistant Director Jim Brown, instructors, and program assistants. College faculty members, high school teachers and administrators, and graduate students in engineering, mathematics, and computer science serve as instructors. College undergraduates and high school students work as program assistants.

Funding comes from Texas Tech, from the Texas Legislature (through UTSA), and from local grants by The Helen Jones Foundation and The CH Foundation.

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**Emmy Noether Day**

The 7th Emmy Noether Mathematics High School Day was hosted on May 6, 2009, by the Department of Mathematics and Statistics at Texas Tech University. The main goal of this event is to promote mathematics and related sciences among young female students, as well as help increase the recruitment of quality undergraduate students at Texas Tech University. 10 teachers, 142 high school students and 20 middle school students from 12 different schools participated in this event, together with 3 university administrators, 21 faculty members, 5 staff members and 19 graduate and undergraduate students from Texas Tech University. The committee in charge with organizing this 7th edition included: Eugenio Aulisa, Roger Barnard, Jerry Dwyer, Jennifer Emerson, Gary Harris, Raegan Higgins, Wayne Lewis, Chris Monico, Monty J. Strauss, Magdalen Toda, and Brock Williams. All departmental faculty members and students are welcome to help organize this annual outreach event. This year’s featured activities included a challenging math competition and several workshops for students and teachers, as well as a career panel. 22 students received awards for their performance in the competition. The College of Education conducted a general survey in order to evaluate the impact of this event on the participants.

The Emmy Noether Mathematics Day at Texas Tech University was featured by Women in Math as one of the main twenty outreach programs in this direction worldwide. For more details, please see darkwing.uoregon.edu/~wmmmmath/Activities/index.html as well as the event’s main web site at www.math.ttu.edu/~enoether.

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**The Joy of Thinking**

The Joy of Thinking, supported by the MAA Tensor fund, establishes girls’ math clubs designed to increase interest and enthusiasm for scientific reasoning and mathematical activities among pre-adolescent and adolescent girls. It is hosted by the Department of Mathematics & Statistics and several local middle schools. The program began with a grant to Drs. Magdalena Toda and Jerry Dwyer in 2003 and, as of May 2009, twelve separate clubs had been formed in schools in Lubbock. These represent a diverse range of schools including one which is 97% Hispanic, several public schools and one private school. A feature of the program is to have successful female students, undergraduate and graduate, oversee the implementation of these clubs. Clubs meet once per week for hands on math activities and math games. This program has been highlighted in the MAA FOCUS magazine and in the newsletter of the Association for Women in Mathematics.
Mathematician, educator, author, actor, artist, dancer, world traveler, and true humanitarian, passed away on August 25, 2007 at the age of 88.

Ali was born on April 7, 1919 in Teheran, Persia. He earned his B.A. at the University of Teheran in 1942, and served as a math instructor at Teheran Technical College from 1942-46. Following his immigration to the United States in 1947, his first love was drama and the performing arts, however, he was forced to study math to receive an extension on his visa, and thus continued his education earning his M.A. in 1951, and Ph.D. in 1955, both from UCLA. He served as a Professor of Math at the University of Idaho; Queens College, New York City; Purdue University; University of Florida, Gainesville; Clarkson College, Potsdam, New York; and Texas Tech University. In 1975, he was awarded the medal of Pro Mundi Beneficio, Academia Brasileira De Ciencias Humanas. He became Professor Emeritus at Texas Tech University in 1988. He was the author of several books, including, Elements of Linear Space; Extreme Properties of Linear Transformations and Geometry in a Unitary Space; Classes Residues et Figureance Ficelli; and plays, including Kaleeleh and Demneh and Three Persian Tales. His writings included over 150 papers, articles, and books, and he was often featured in Highlights for Children.

Dr. Amir-Moez was fluent in four languages; Persian, French, English, and Spanish, and had books published in all four languages as well as translated into many more. He was a man of great faith and great love of all mankind. During World War II, 1936-1938, he served in the Persian Army, as a 2nd Lieutenant, and was decorated the Honor Emblem Persian Royal Court.

Ali became a naturalized American citizen in 1961 and his favorite holiday was Thanksgiving because he was so thankful to America. He was a devoted citizen and believed there were no real excuses for not voting. Although he had traveled the world, he preferred to call Lubbock his home town. As a citizen of Lubbock, Ali, was very supportive of the Children's Home of Lubbock. He was a member of the Lubbock Gem and Mineral Society and immensely enjoyed attending and participating in Gem and Mineral shows.

Professor Gustafson passed away on July 16, 2007 at the age of 62. He retired in 2003 after 27 years as a faculty member in the department. Dr. Gustafson was born in New Haven, Connecticut. He began his collegiate education at Wesleyan University in Middletown, Connecticut earning a B.A. degree in 1966. He earned a masters degree in 1967, and a Ph.D. in mathematics in 1970, both from the University of Illinois at Urbana-Champaign. He became a teaching fellow at the University of Illinois from 1966-1970. Then from 1970-1976, Dr. Gustafson was an Assistant Professor at Indiana University, and was a Visiting Assistant Professor at Brandeis University from 1972-1973.

Dr. Gustafson’s expertise was in ring theory and algebra, and he was knowledgeable about most of modern mathematics, according to his late colleague, Dr. Paul R. Halmos. Dr. Gustafson was one of many modern mathematicians who appeared in a collection of photographs compiled from Dr. Halmos’ private collection of snapshots and published in I Have a Photographic Memory, (American Mathematical Society, Providence, Rhode Island, 1987). In addition, Dr. Gustafson was the author or co-author of over 40 published papers. He presented numerous invited addresses and colloquia domestically and internationally in Germany, Sweden, Denmark, and Canada. He organized the department’s colloquium series for many years.

In 1977, Dr. Gustafson was among the recipients of the Lester R. Ford Award, given annually by the Mathematical Association of America at the Summer Meeting of the association. The Lester R. Ford Awards were established in 1964 to recognize authors of articles of expository excellence published in The American Mathematical Monthly or Mathematics Magazine. Up to five of these awards are given annually. William P. Ziemer, William H. Wheeler, S.H. Moolgavkar, Paul R. Halmos, John H. Ewing and Dr. Gustafson were honored for “American mathematics from 1940 to the day before yesterday,” (American Mathematical Monthly 83 [1976], 503-516).

In addition to his interest in mathematics, Dr. Gustafson enjoyed classical, jazz, and blues music. He was a member of the Lubbock Amateur Radio Club for almost 20 years. He was considered to be one of the best CW (Morse code) operators in West Texas. For many years, Dr. Gustafson traveled regularly all over the Southwest to amateur radio gatherings, swap-fests, and to meet and visit with his many radio friends. His key is now silent, KG5OV.

Professor Dayawansa passed away on October 18, 2006 at the age of 50. Daya joined the Department of Mathematics and Statistics as Professor in 1996, a position he held until his untimely death due to illness. At Texas Tech, Daya was awarded the Paul Whitfield Horn Professorship in 2003. This is the highest honor the university may bestow on members of its faculty, and are granted to professors in recognition of national or international distinction for outstanding teaching, research, or other creative achievements.

He was born in Sri Lanka on March 27, 1956. After graduating from the University of Peradeniya in Sri Lanka, Daya came to the United States in 1979 to pursue graduate studies, first at Clarkson University and then at Washington University in St Louis, Missouri, where he earned a Doctor of Science degree. Daya arrived to Texas Tech after serving as an Associate Professor of Electrical Engineering at the University of Maryland, College Park.
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