LU STAIRSTEP Program

LU’s STAIRSTEP program is designed to increase the number of students receiving baccalaureate degrees in Computer Science, Chemistry, Physics, Geology, Earth Science and Mathematics at Lamar University. STAIRSTEP is an acronym for STudents Advancing through Involvement in Research Student Talent Expansion Program.

STAIRSTEP targets women and minorities who are traditionally underrepresented in Science and Technology, as well as low income and first generation college students. The program engages and develops students through an undergraduate experience that includes research, mentoring, tutoring, outreach, support, and other activities designed to enhance the students’ learning experience. The teams include students from all levels, freshmen through seniors, and adopt a peer-instructional method. The students apply concepts they learn in class to their research, and their research is in turn incorporated into relevant classes. STAIRSTEP students get experience in teamwork, leadership, writing papers and making professional presentations.

STAIRSTEP is supported by the National Science Foundation's Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP). It is a joint effort of five departments – Mathematics, Computer Science, Physics, Geology/Earth Sciences, and Chemistry. The Associate Director of the project and faculty representative from our department is Dr. Jennifer Daniel. Dr. Daniel worked on research projects with five undergraduate mathematics majors in AY2010, and is working with a group of five undergraduate mathematics majors in AY2011 as well.

The Actuarial Examinations Process

Actuaries achieve professional status by passing a set of actuarial examinations. Preliminary examinations are in the areas of Probability, Financial Mathematics, Life Contingencies, and Construction and Evaluation of Actuarial Models. Many prospective actuaries begin taking these examinations while in college. Dr. K. Das has mentored a number of students in actuarial studies and has begun to guide them through the preliminary examinations process. As recent examples, graduate student Shan Lu has passed the first four actuarial examinations and undergraduate student Nick Duplan has passed the first and second actuarial examinations.

College and Career Readiness Standards

Texas has recognized the need to increase the levels of expectation and achievement for its students by recently adopting across-the-board College Readiness Standards (CCRS) in the critical areas of English/language arts, social sciences, mathematics and science. In particular, the goal of CCRS is to better align the public and higher education curriculum so that high-school graduates are college-ready. The Texas Higher Education Coordinating Board is responsible for the creation of the CCRS in direct collaboration with the Texas Education Agency. Dr. MaryE Wilkinson has completed the department’s component of the CCRS project for the University. Faculty participants in our department also included Drs. Jennifer Daniel and Sandra Richardson and Mr. Jack Gilcrease. All three attended symposiums and Dr. Daniel provided extensive material for the College Algebra Reference Course.

The ACE Initiative

The Teacher Quality Algebra Competence and Excellence (ACE) Initiative will end May 2011. This two year Texas Higher Education Coordinating Board funded grant program provided content and pedagogical professional development to Southeast Texas Algebra I and II teachers. The program director, Dr. Sandra Richardson, program liaison, Dr. MaryE Wilkinson, and ACE consultant, Ricky Martin, provided over 200 hours of professional development to accepted program participants.
The Lamar Achievement in Mathematics Program (LAMP) will host its annual summer camp from June 20 – July 1, 2011. LAMP is a free, enrichment summer program for mathematically talented high school students interested in exploring the beauty and variety of mathematical fields and careers. Program details can be found at http://www.math.lamar.edu/activities/LAMP/LAMP.htm. Applications are due May 23, 2011. Questions or inquiries may be directed to the program director, Dr. Sandra Richardson, at sandra.richardson@lamar.edu or by telephone via the department.

Mathematics for English Language Learner Initiative

The Texas State University System Mathematics for English Language Learner Initiative (MELL) is completed. Lamar University has been one of five system universities that have participated in the grant for six years. Members of the LU team included Joanne Baker, Kumer Das, Paul Dawkins, Kyehong Kang, Ted Mahavier, and Sandra Richardson. MaryE Wilkinson served as the LU PI and reports that the last summer of the grant was busy. LU sponsored two three-day summer workshops for secondary mathematics teachers. These workshops were offered in partnership with Region 5 Education Service Center in Silsbee, and Region 4 Education Service Center in Houston. As the MELL project ended, members of the team at LU turned the focus from practicing teachers to preprofessional teachers. As a last initiative, licenses for the commercial software Rosetta Stone have been purchased for the Department of Mathematics and the Department of Professional Pedagogy. Spanish I, II, and III will be installed in both labs for free use by preprofessional teachers in these departments.

MathFest! 2010

The Department of Mathematics hosted MathFest! 2010 for approximately 150 high school mathematicians representing 13 high schools. The students participated in mathematics competitions and attended lectures. Winners included students from Buna, Evadale, Little Cypress-Mauriceville, Port Neches-Groves, Silsbee, and Warren. A $1000.00 scholarship was awarded to a student from Little Cypress-Mauriceville. Dr. Kumer Das spoke about the automobile insurance "Rating Game" and Dr. Sandra Richardson challenged students in a game of "Who Wants to be a Mathematician." For the afternoon general session, Drs. Peggy Doerschuk and Jennifer Daniel and members of their team of students for "STAIRSTEP: Research and Outreach in Math and Science" provided a view of university level research projects.

Recent Publications, Research Announcements, and Presentations Of Faculty and Students

The students and faculty members submitted and/or published a number of scholarly articles and delivered numerous professional presentations. A number of them are highlighted. We are particularly proud of the large number and high quality of student presentations. Each of those highlighted have worked under the direction of either Dr. J. Daniel or Dr. K. Das.

Selected Publications


1. An infinite sequence of spheres is inscribed in a right circular cone with base length 2. The largest sphere has radius length 1. The second sphere is “balanced” on top of the first, the third on top of the second, and so on. Find the sum of the volumes of the spheres.

2. Consider the set of all four-digit numbers that may be formed using digits 1 through 6, and using each digit at most once. Find the average of all such four-digit numbers.

Solutions: 1. $\frac{256\pi}{189}$ square units 2. 3888.5
There are numerous opportunities to support our Department. If you would like to make a tax-deductible donation directly to our Department, please make your check payable to the Lamar University Department of Mathematics and send to:

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If you have questions or comments, please write to the above address or call us at (409)-880-8792.