# Increasing STEM Graduation Rates

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In order to increase the number of students graduating in STEM disciplines (science, technology, engineering and mathematics), Sam Houston State University has implemented a new scholarship program aimed at academically talented but financially needy students. The PEERS program -- Peers Enhancing their Education through Research and Scholarship -- has been funded by the National Science Foundation's S-STEM program since fall 2008, and provides scholarships as well as professional development assistance to qualified undergraduate and graduate students majoring in biology, geography, geology, mathematics or statistics.

Each year 10-12 freshmen and sophomore students receive annual awards of up to $2500, while the same number of juniors and seniors are awarded $5000. This financial support is intended to decrease the level to which our students rely on income from outside sources, such as loans (which burden so many of our students after graduation) or off-campus employment (which distract our students from excelling in their courses). All scholarships are automatically renewed in subsequent years provided certain academic standards are met.

In addition to financial support, students are encouraged to be involved in a research project with a faculty mentor. In many cases undergraduate research projects result in journal publications, travel to regional or national research conferences, and oral (or poster) presentations at meetings. The College of Arts & Sciences and the Office of Graduate Studies at SHSU has been very generous in providing travel assistance to several PEERS scholars involved in research projects.

Four of the STEM disciplines involved in the PEERS program -- biological sciences, geography, mathematics, and statistics -- offer the degree of Master of Science from SHSU. Most of the students in these graduate programs teach lower-level courses or labs as graduate assistants. Those graduate students also selected as PEERS scholars receive half of their salary from the PEERS program and half from the College of Arts & Sciences, with their teaching duties cut in half. For example, graduate students in mathematics typically teach two courses each semester in exchange for an annual salary of up to $15,000. Those graduate students accepted into the PEERS program, however, teach only one class each semester for the same salary. Therefore, these students have

more time to spend on their own coursework and gradate project.

Several current PEERS scholars are geology or geography majors. The Department of Geography and Geology at SHSU will begin offering classes in support of its new Master of Science degree in GIS in fall 2010. The PEERS program will accept several MS students in this new and exciting program in geography, and any interested students are encouraged to apply. More information on this scholarship program can be found on the website www. shsu.edu/peers.

*Brian Loft is a differential topologist in the Department of Mathematics and Statistics at Sam Houston State University.  While geometry and topology have interested him since his doctoral studies at the University of Oregon, Dr. Loft is also loves exploring the instances in which mathematics is applied to other disciplines such as chemistry and biology.  It is these projects that enable him to involve students at all levels.*

*Melinda Miller Holt received her BA and MA in mathematics and her Ph.D. in statistics from Baylor University, and is now an Associate Professor of statistics at Sam Houston State University. She teaches a variety of statistics courses from the freshman level to the graduate level. Her research publications include such topics as Bayesian statistics, biopharmaceutical statistics, gender equity in the sciences and statistics education appearing in journals such as Journal of Biopharmaceutical Statistics, Journal of Statistical Computation and Simulation, Biometrical Journal and Journal of Statistics Education.*

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