

STATE Awarded \$1.2 million NASA Grant

The Department of Physical Sciences is flying high after NASA awarded the department a \$1.2 million grant. The award was announced in February with the funds being used to enhance the astrophysics program at South Carolina State University.

"Excitement is the only way to describe the way I feel about this grant", said Dr. Donald Walter, associate professor at STATE and the program's principle investigator.

The grant is entitled "Curriculum Enhancement Through Space Science Research (CESSR)" and is part of a NASA program designed to bring the excitement of NASA research into the classroom. Fifteen schools applied for the grant, but only three were awarded.

"The principle goal of the grant is to develop our curriculum. As a result, a number of new courses will be created and a greater number will be enhanced through the purchase of equipment, faculty development, training, and through student research projects using up-to-date methods and concepts," said Dr. Walter.

As a direct result of the research, STATE will be the first university to operate an innovative low-light video imaging system for astronomical observations, which will enable students and faculty to participate in worldwide monitoring of solar system events as well as develop educational materials, which are currently unavailable.

The grant works like this; there are 16 students who will be divided into groups of four with a faculty advisor assigned to each group. During their eight week summer session, the students' primary goal is to work with their mentor to come up with a research idea, develop, explore and implement the project. In the end, the students will also present their findings at a professional meeting as well as give talks to K-12 school groups, and use email to answer any questions the K-12 students may have. The faculty, on the other hand, will be trained to incorporate what was learned in the process into their courses.

Dr. James Payne, chairman of the Physical Sciences Department, is a faculty mentor for one of the teams. "This is a way for students to be involved in a real world situation in that they will have one project but they will have to work as a team to get it done," said Dr. Payne.

As far as the individual team projects, the faculty mentor and the students are responsible for coming up with an idea that will develop skills in the three different areas of study supported by the grant, science, computer science and engineering technology. All projects must also include an astrophysics application.

Another component of the grant is to upgrade equipment in the departments. Some of the funds from the grant will be used to purchase software and other materials to be used not only for the entire student body and faculty use those participating in the program, but will also be enrolled in the related courses. "I'm excited about the interdisciplinary nature of the project and how it will allow faculty and students from all departments to work together," said Dr. Walter. One software program the students will be introduced to is LabVIEW. The software package will introduce state-of-the-art techniques and methodologies currently used in industry and government laboratories.

After the eight-week summer research, students will then enter a two-semester course to continue their project and their studies in astrophysics. Unlike other courses taught on campus, the stipend will continue during the student's enrollment in the research courses during the academic year. "We want the students to develop, carry through and get results," said Dr. Payne.

Erica Lamar is one of the students participating in the program. A senior, Lamar is a double major in electrical engineering technology and physics. Her fascination with astrophysics and her desire to be employed at NASA were her main reasons for getting involved with this project. "I visited NASA and I was able to network with the people there. They have seen my skills and know my credentials, so I think I can be a prime candidate for a job there. This all thanks to my experience in research such as the one I will participate in this summer," said Lamar.

Along with their course work those students participating will also take their project and information on the road to area high schools. Facilitators hope this outreach strategy will impact more than 1,200 precollege students and teachers by introducing them to NASA's space science discoveries. Furthermore, they hope to get them excited about inquiry-based learning.

Another requirement for the teams is to set up a web page. This will be an outlet for not only local schools but schools everywhere will be able to learn more about the research through the Internet.

In the end one of the goals of the grant is to teach the students to be more aware of space science and the role of mathematics and other fields in supporting studies in astrophysics. "We want to introduce it to them before they get to the job market and graduate school," said Dr. Walter.

As a result of the grant, the department will be working with a number of universities and commercial organizations to achieve the objectives of the grant. The groups include NASA's Goddard Space Flight Center, Western Kentucky University, The University of the Virgin Islands, National Instruments, a company that will assist with software training and A Tech, a company that builds astronomical instruments. "These collaborations will eventually lead us into long term partnerships with these companies and universities," said Dr. Walter.

This is the department's second grant from NASA within the past several years valued at more than \$1 million dollars. The University also has related, ongoing research in astrophysics that includes taking observations with the Hubble Space Telescope.

The grant funds are \$300,000 a year for four years and will bring the Departments of Physical Sciences, Electrical and Industrial Engineering Technology and Mathematics and Computer Sciences together on the project. Those involved in the program are Dr. Walter, the program's principal investigator, Dr. Jim Anderson, dean of the School of Engineering and Technology, Dr. Payne, chairman of the Department of Physical Sciences, Dr. Nikunja Swain, associate professor of industrial and electrical engineering technology, Dr. Hasanul Basher, professor of industrial and electrical engineering technology and Jafar Sadighi, instructor of math and computer sciences, and Dr. Linda Payne, Director of the BCO Math/Science Hub, are also partners in this venture.