Steward Hosts the NASA Center for Astronomy Education

By Tim Slater

Steward Observatory is home to the Conceptual Astronomy and Physics Education Research (CAPER) Team, a group of faculty and graduate students who are developing innovative approaches to improving student learning in introductory astronomy. Supported by large grant and contract awards from NASA’s Navigator Planet Finding Education and Public Outreach Program, which includes the Large Binocular Telescope program, and NASA’s Spitzer Space Telescope Education and Public Outreach Program, CAPER hosts the NASA Center for Astronomy Education Professional Development Program for community college faculty.

Why is this emphasis on teaching needed? Almost half of the 300,000 students who take an introductory astronomy course this year will take their class at a 2-year community college. Most of these students are non-science majors who are taking astronomy to satisfy a science requirement. Many are afraid of science and math, and are taking astronomy because it seemed the easiest from a long list of science courses. In addition, the courses are often staffed by teachers who are not trained as professional astronomers.

In response, CAPER faculty conduct teaching excellence workshops annually for several hundred community college faculty on eight to ten college campuses across the country. These two-day workshops provide faculty with the latest research results from cognitive science related to how students learn astronomy. They focus on the problems teachers face and develop practical solutions for the troubling issues in curriculum, instruction, and assessment. To improve instruction, faculty learn how to create productive learning environments by using interactive lectures, peer instruction, engaging demonstrations, collaborative groups, and tutorials.

Over the last three years more than 1,000 faculty have participated in these workshops. Independent evaluation has shown that the workshops influence faculty to improve students’ achievement as well as students’ attitudes toward astronomy and science in general. Faculty who attend the workshops become part of a vibrant online e-community who interact via the Internet to help one another improve their teaching. The Center for Astronomy Education reflects the strong emphasis that Steward places on high quality astronomy teaching. After their experience at the workshops, astronomy professors bring new skills and renewed enthusiasm back to the classroom.

The CAPER Team at Steward is under the direction of Professor Tim Slater and includes research and teaching staff members Dr. Ed Prather and Gina Brissenden. CAPER serves as an interdisciplinary research group for graduate students interested in astronomy education research from across campus and hosts college and university faculty on sabbatical from around the world.

http://caperteam.as.arizona.edu/