

Teaching a new kind of STEM

By **KATIE KREIDLER Staff Reporter** | **Posted: Wednesday, October 16, 2013 10:00 am**

The College of Education is poised to transform itself with a new Integrated STEM Teacher Education Program.

Purdue is one of the first universities to develop a program that seeks to infuse science, technology, engineering and mathematics in a new initiative geared toward future educators. It will consist of a specialization program in which anyone in the College of Education can choose to enroll and will also bring in six new professors to develop a research program.

Lynn Bryan, a professor and director of the center for Advancing the Teaching and Learning of STEM, has been active in the program's genesis. She spoke of the way the STEM disciplines have been treated traditionally in the classroom.

“Up until recently, science has been demarcated from engineering, mathematics, in our classrooms in particular, even at the college level,” she said. The Integrated STEM program, instead, seeks to teach how the disciplines are interrelated, especially in solving major problems.

“Students are going to have to solve problems that transcend disciplines,” Bryan said.

She gave the example of nanotechnology used to develop targeted cancer treatments. Researchers developing these treatments not only have to understand the biology of cancer, but the physics of how forces operate on such a small scale.

Teacher education to help solve these problems will begin with a new course, titled “The Foundations of Integrated STEM Education,” to be introduced next semester. This will be part of a specialization program that students can enroll in, which, for those already in science and math, can count toward many of their required courses.

Maryann Santos de Barona, dean of the College of Education, spoke about how the initiative grew and developed at Purdue through a cluster hire.

“We are building a core group of faculty who will dedicate their energy to developing truly integrated coursework for pre-service teachers and will engage in research focused on STEM education in a variety of contexts,” Santos de Barona said.

These professors will have joint appointments in the College of Education as well as the Colleges of Science (biological sciences, chemistry, and physics), Technology, Engineering and Agriculture.

The specialization program will extend beyond the undergraduate level to encompass masters and

doctorate programs. Professionals already working as teachers can also take courses and get the specialization.

“It’s a fairly broad initiative that will offer opportunities at any level of education,” Bryan said.

Cassie Mills, a senior in the College of Education, can see the benefits of the program. But she wants to make sure there’s still balance, and that the focus on STEM doesn’t overshadow other areas, like English. “It’s kind of embarrassing if second graders know more about Smart-Boards and technology than we do,” she said.

Bryan recognizes the importance of the liberal arts, particularly strong skills in reading and argumentation for integrated STEM.

“It (the connection with the liberal arts) is important, and I think this particular initiative recognizes the importance of it,” Bryan said.