REU Program

Undergraduate research program gives students hands-on experience

The School of Mines is the site of two Research Experiences for Undergraduates (REU) programs. REU is funded by the National Science Foundation (NSF) to provide opportunities for undergraduates to participate in active research.

REU began out of the NSF's desire to assist in developing a pipeline of students that would go on to earn graduate degrees. The NSF decided that in order for this to happen, undergraduates should have the opportunity to experience research; They developed the program, provided funding, and REU was born.

The program has a focus on providing these opportunities to under-represented student populations, such as American Indians and women. Each site accepts 10 students every summer.

The first REU site on the School of Mines campus began in 1998. The program, "Advanced Materials and Biochemical Engineering," is centered on chemical engineering and has several goals: 1. To provide undergraduates of chemical engineering or allied fields with unique and exciting research opportunities in the area of molecular level modification of surfaces utilizing state-of-the-art research equipment; 2. To enhance the participants' critical thinking and communication skills; 3. To spark the participants' interest in pursuing graduate education; 4. To introduce the participants to "beyond the classroom" experience in a research setting; and 5. To enhance the participants' ability to think independently.

"REU is a way to develop another set of skills that undergraduates don't normally have access to. It's a very unique opportunity where students learn their fields by doing cutting-edge research," Dr. Robb Winter, site director and chair and professor, Chemical and Biological Engineering Department, said. "One of the best ways for students to make choices about their futures intelligently is to have experience in the kind of work that they are interested in."

This site has evolved from running solely on the School of Mines campus to having an international component. Several years ago, the NSF was interested in giving undergraduate research associates experience internationally, because they were concerned with American engineering students having a lack of international experience.

Winter, chair of the Chemical and Biological Engineering Department, applied for a supplemental grant that funded a sister site at the Mongolian University of Science and Technology in Ulaanbaatar, Mongolia. Three students have studied in Mongolia for the past two years. According to Winter, plans for another site in China are in the works.

The second REU site on campus, "Materials, Mechanics and Manufacturing (3M)," is new this year. Led by site director Dr. Lidvin Kjerengtroen, a professor in the Mechanical Engineering Department, and other senior faculty members, the site focuses on cutting-edge research in materials, mechanics, and manufacturing.

The main objective of the 3M site is to increase the number of students who enter graduate programs. Another objective is to increase student abilities and make them competitive in a research environment by fostering team building skills, technical

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formulating a plan to meet them. The center is conducting market research to find out what programs are needed and what needs are currently not being met.

The center will work as a clearinghouse to avoid duplicate coursework and facilitate a plan to share professors for courses offered by separate universities. The Center's location near downtown Rapid City includes more than a dozen offices and a large classroom and houses representatives from several universities.

The center is under the direction of a consortium composed of BHSU President Dr. Thomas Flickema and School of Mines President Dr. Charles Ruch as well as Dr. Tad Perry, Executive Director of the South Dakota Board of Regents.

communication, ethics, and overall research acumen.

As part of the graduate education goal, one of the students' responsibilities was to research the process of applying to graduate schools. Each student had to explore two schools: the School of Mines and another of their choice.

"This experience prepares students for the future," Dr. Kjerengtroen said. "They will leave the program with increased technical and professional skills."

The South Dakota School of Mines and Technology Magazine and the Hardrock, published by the SDSM&T Alumni Association, will be merged into one publication scheduled for its first release in April 2006.

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