Engage has a Direct and Positive Impact

Increasing both retention and graduation rates are publicly stated priorities for Tennessee’s Governor Phil Bredesen as well as UT Knoxville Chancellor Jimmy Cheek. In the College of Engineering, the Jerry E. Stoneking Freshman Engineering Fundamentals Program, has been shown to improve both. Engage, one of the country’s most innovative freshman engineering initiatives, is still going strong 13 years after its inception.

Initiated by the college’s Board of Advisors and other industry leaders and beginning with a pilot group of 60 freshmen in the fall of 1997, the program has grown to a total enrollment of 348 freshmen in the fall of 2009.

“We show that 78% are passing EF 151 and 82% are passing EF 152, and that number has gone up quite a bit,” notes Dr. Richard Bennett, a professor in the Department of Civil and Environmental Engineering and longtime Engage faculty member who became the director in 2008. “The retention rate of freshmen taking EF 151 is 82%. The retention rate of freshmen taking EF 157—the honors course—is even better, at 89.5%.”

While part of the changing demographics can certainly be attributed to the high caliber of students accepted into the program, additional data shows that this program has a direct and positive impact.

The Engage program incorporates project-oriented, hands-on activities. Freshman engineering topics—such as physics, statics and dynamics—are integrated into courses during the students’ first two semesters. The program also emphasizes teamwork and communication skills. Additionally, teams of professors working with graduate student assistants conduct all of the instruction in the Engage curriculum.

The Engage program is currently housed in Estabrook Hall, where faculty offices, study areas and classrooms have been located to establish a “Freshman Village.” Students have the opportunity to live on a floor dedicated to Engage students, providing a living-learning community.

“We’ve made a few changes, but the basic program is still the same,” Bennett said. “We added Dr. Ortal Arel to our faculty over a year ago—he has a Ph.D. in electrical engineering. Dr. Arel brings some diversity to our group, since my area of expertise is civil engineering and one of our other instructors, Will Schleter, has a mechanical engineering degree.”

The program has also adapted to the modern age of personal communication devices with a new response system. A clicker or other web-enabled device such as a laptop or an iPod allows students to respond to questions in lectures online and receive immediate feedback. Students can also look at archived editions of class sessions to see whether their answers were right or wrong.

Engage expanded its curriculum last semester with a module on electricity and magnetism, which includes instructions on basic circuits and testing. At the end of their freshman year, the Engage students declare a major and move on to their respective departments.

Private support for Engage provides funding to strengthen the program and is a college campaign priority. Three major campaign commitments from engineering alumni are helping with this initiative. In addition to campaign commitments to the Tickle Engineering Building and to support research through the Sustainable Energy and Education Research Center, Jim Gibson (BS/IE ’71) has pledged to the Engage fund and Jim McKinley (BS/ChE ’77) and his wife Sándra have made a $150,000 commitment to the Engage endowment. Campaign Executive Committee member Bill Moore (BS/EE ’59, MS/EE ’60) and his wife, Sylvia, have also created a trust that gives $30,000 per year to Engage. Gift recognition opportunities include endowing the director’s position, endowing faculty positions dedicated to Engage and creating Engage graduate fellowships.

Bennett is encouraged by the program’s success and the support that it has received from faculty and students.

“We are also excited about the move to Ferris Hall, which will take place after the completion of the Min H. Kao Electrical Engineering and Computer Science Building,” Bennett commented. “Our program will be located on part of the fourth floor and all of the fifth floor of Ferris once the electrical engineering and computer science faculty and staff move to the new facility. The area will be renovated specifically for Engage and we should have much improved and updated space for classrooms, offices and laboratories.”

For more information on the Jerry E. Stoneking Engage Freshman Engineering Program, visit http://ef.engr.utk.edu/ef-2008/.