

UMass Amherst Feature Stories

Preparing Science Leaders

March 2, 2012
University Relations

New program breaks ground

In a groundbreaking new program, undergraduate science and engineering students are collaborating to understand complex global challenges and use multi-disciplinary approaches to overcoming them. Launched in 2010, iCons (Integrated Concentration in Science) is preparing the next generation of technology leaders by focusing on problem-based learning. Through courses in the 18-credit, four-year concentration, students use scientific methods in a team environment where communication and attitudes are equally emphasized.



iCons students work on science problems that capture their interest and prepare them for success as leaders and scientists.

“At its essence, iCons is student-driven learning and reflects the need to integrate disciplines to ease 21st century problems,” says Scott Auerbach, director of iCons and a professor of chemistry. Ninety students are enrolled in iCons, which complements science and engineering majors while trying to break down the “silos” around each discipline. The courses, small classes that incorporate case studies, laboratory work, and research, center on societal problems including biomedicine, renewable energy, climate change, and clean water, all areas of research excellence at UMass Amherst. The first class of iCons scholars launched their iCons careers by studying cholera in Haiti, the impact of aluminum on Alzheimer’s disease, the Gulf oil spill, and biomass utilization. By working in multi-disciplinary teams on unsolved societal problems, these students learned how real-world science feels in the 21st century.

Student teams then work to discover different ways to address each problem area, harnessing their particular passions and science or engineering backgrounds. As such, iCons relies on diversity of people and ideas. “We want iCons to be the program that would have kept Bill Gates and Steve Jobs in college,” says Auerbach.

The program caught the attention of faculty members from the Swiss Federal Institute of Technology in Lausanne, Switzerland, who visited the campus in October 2011 to learn more about building a version of iCons. While gaining an international reputation, iCons has also proved to be attractive to top students in and out of Massachusetts.

Classes are held in the new Integrated Science Building where the life sciences and physical sciences are together under one roof, creating the bricks and mortar for a new educational paradigm. An alumnus with a distinct vision for integrative science donated seed funds to create iCons. “With the new building and new program, iCons students at UMass Amherst work on science problems that capture their interest, and prepare them for success as leaders and scientists,” says Auerbach.