

UA to Offer First Corrosion Reliability Program in Nation

When it comes to deterioration, rust plays no favorites. From playground equipment to heavy machinery, hubcaps to bridges, if it's made of metal, it's bound to rust. The University of Akron College of Engineering is hoping to make an impact on corrosion. Beginning Fall 2010, the College will offer the nation's first baccalaureate program in Corrosion And Reliability Engineering (UA CAREs). Individual courses will be offered as early as the Spring 2010 semester.

According to a 2002 report from the Federal Highway Administration, every year the direct effects of corrosion on our country's machinery, infrastructure and vehicles costs the U.S. economy more than \$279 billion — or 3.2% of the Gross Domestic Product. Seven years later, the U.S. Government Accountability Office estimates that cost at \$400 billion. The Department of Defense alone spends more than \$22 million a year trying to control corrosion.

"It is a well-documented fact that our nation is facing a major crisis in managing our aging infrastructure and its linkage to corrosion is clear," says UA President Dr. Luis M. Proenza. "We are pleased to partner with our elected leaders, the Department of Defense (DoD), NACE International and many of our colleagues from industry to provide a critical component of the nonmaterials-solution to corrosion prevention and control."

Although some level of corrosion will occur in the best of climates, Northeast Ohio's unpredictable winters, with repeated freezing and thawing of water, coupled with the use of salt and other chemicals to clear icy and snowy roads, makes The University of Akron the ideal location for the program.

UA CAREs program

Housed within the Department of Chemical and Biomolecular Engineering, the UA CAREs program will incorporate a multidisciplinary curriculum designed to train engineers to understand the origins and manage the effects of corrosion.

Dr. Ed Evans, associate professor of chemical and biomolecular engineering, and consultant Dr. Aziz Asphahani, an MIT graduate and an internationally recognized member of the corrosion industry, spent a year developing the curriculum, which was approved at the June 2009 UA Board of Trustees meeting. Evans says the program is consistent with the College's other engineering disciplines, in that it is based on the fundamentals — science, math and engineering — and includes a capstone design sequence and voluntary co-op element.

"Much like the other engineering programs, this degree should prepare graduates to go into a vast array of industries," Evans says. "However, because the nature of corrosion engineering and the fact that it cuts across so many disciplines, students will be exposed to a broader based curriculum, with instruction in chemical, mechanical, civil and electrical engineering, as well as physics and modeling. In addition, they will take a project engineering sequence. When they graduate, they will be able to han-



Dan Dunmire (fourth from left), director of the Office of Corrosion Policy and Oversight (US DoD), presents a check to The University of Akron College of Engineering to establish a Corrosion and Reliability Engineering Program. Accepting the check are (l-r) UA President Dr. Luis Proenza; Sue Louscher, UA CAREs project director; Congresswoman Betty Sutton (OH-13); and Dr. George Haritos, dean of the College of Engineering.

dle a diverse group of problems, making them all the more valuable to employers. We will be preparing our students for a field that is gaining importance and already shows a need for prepared employees who can make an impact."

Evans says, according to a recent NACE International survey, 81 percent of corrosion-related employers reported that they would prefer to hire an engineer with an undergraduate degree in corrosion engineering.

"The University's establishment of a corrosion engineering program is driven by a national need," says Dr. George Haritos, dean of the College of Engineering. "The demand for corrosion engineers and related qualified experts is immense, given the fact that corrosion is the primary source of deterioration of our highways, airports, water and energy supply systems, power generation and waste treatment facilities."

Haritos adds that industry studies show that there is a 75% shortage of experts with corrosion-related skills. This deficiency, coupled with recent DoD mandates requiring contractors to include corrosion plans as part of their proposals to DoD, fuels the demand for knowledgeable engineers.

In addition, the University has worked with industry associations to co-develop industry-accredited work force development certification courses for technical training. These courses will be offered in partnership with UA's Medina County University Center (MCUC).

Sue Louscher, project director for UA's Corrosion Engineering and Reliability Engineering Program, says plans for associate and master's degrees are underway, and because the College offers a general Ph.D. in engineering, doctoral candidates can specialize in corrosion and reliability engineering, beginning in 2010. A multidisciplinary research center is also being explored.