Two College of Engineering Faculty Members Selected to Participate in National Academy of Engineering Symposium

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Two MSU College of Engineering faculty members have been chosen to take part in the National Academy of Engineering's (NAE) fourth Frontiers of Engineering Education (FOEE) symposium.

Dean Aslam, professor of electrical and computer engineering, and Jon Sticklen, director of MSU's Center for Engineering Education Research (CEER) and the Applied Engineering Sciences program, were selected from among 72 of the nation's most innovative, young engineering educators. Participants were nominated by fellow engineers or deans and chosen from a highly competitive pool of applicants.

Aslam and Sticklen will join other faculty members from across the country who are developing and implementing innovative educational approaches in a variety of engineering disciplines. Participants will share ideas, learn from research and best practices in education, and leave with a charter to bring about improvement in their home institutions.

"The Frontiers of Engineering Education program creates a unique venue for engineering faculty members to share and explore interesting and effective innovations in teaching and learning," says Charles M. Vest, NAE president. "We want FOEE to become a major force in identifying, recognizing, and promulgating advances and innovations in order to build a strong intellectual infrastructure and commitment to 21st-century engineering education."

This year's program, which will be held Oct. 14-17 in Irvine, Calif., will focus on innovations in the context, curriculum, and delivery of engineering education.

"It is absolutely critical that U.S. engineering educators learn how to become more effective in the classroom, utilizing technology and pedagogy in creative ways in order to produce more innovative graduates who have the ability to address the complex problems of the 21st century," says Larry Shuman, senior associate dean for academic affairs and distinguished service professor of industrial engineering at the University of Pittsburgh, and the chair of the FOEE planning committee. "To do otherwise will cede the nation's place as an educational leader to other, more aggressive countries. At FOEE these outstanding faculty will learn about the newest educational developments ranging from MOOCs (massive, open, online, courses) to online publishing."

At the symposium, Aslam will present his innovative FBEI (Functionalized Bricks with Embedded Intelligence) learning modules, which were created using custom-made LEGO-compatible bricks containing electronic circuits. The modules are designed to spark the interest of learners with different backgrounds and preparation levels—from kindergarten to PhD level. FBEIs stimulate multidisciplinary engineering learning ranging from the extremely simple to the extremely complex. From 2001 to 2012 more than 2,000 learners benefited from FBEI modules nationally and globally. New FBEIs being developed include mind-controlled games/robots and DNA Inspired Active Network Arrays (DIANA) for sparking interest in neural and computer engineering areas, respectively.

Sticklen will interact with engineering education researchers from across the United States to make connections with others and to learn what others are doing. For a poster session that all FOEE attendees participate in, Sticklen will present his view on one aspect of flipped classrooms—the out-of-class delivery of information by voice-over web movies. Part of the poster will focus on the last five years of work bringing the flipped model to one of the classes Sticklen teaches (CSE 131) and the research results he has produced. Looking forward, the poster will also include plans for new research utilizing the MSU REAL classroom facility for AESc 310, a junior-level course in Applied Engineering Sciences that focuses on the analysis of sustainable systems.
The 2012 Frontiers of Engineering Education symposium is sponsored by John McDonnell and the McDonnell Family Foundation.

The mission of the National Academy of Engineering is to advance the well-being of the nation by promoting a vibrant engineering profession and by marshaling the expertise and insights of eminent engineers to provide independent advice to the federal government on matters involving engineering and technology.

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