Demographics and outcomes of mechanical engineering students and factors that influence confidence

9:15 am, March 6, 2015
EIB 132 (Fluor Daniel Building)

Marisa K. Orr, Assistant Professor of Mechanical Engineering
Associate Director of the Integrated STEM Education Research Center
Louisiana Tech University
College of Engineering and Science
Bogard Hall 238
PO Box 10348
Ruston, LA 71272
(318) 257-3124
marisao@latech.edu

Abstract:
The recruitment and persistence of a diverse pool of students is a goal to which most engineering programs aspire. Engineering is often examined as a whole, but student demographics and outcomes vary considerably between disciplines. This research presentation will review two studies. The first describes the demographics and outcomes for students starting in and transferring into Mechanical Engineering (ME) using a dataset from universities in the U.S. that includes over 90,000 first time in college and over 26,000 transfer students who majored in engineering. This work aims to inform the decision making of faculty, department heads, and deans. Although men consistently outnumber women in ME, the rates of matriculation and six-year graduation vary by race and gender. Many studies have shown the importance of student self-efficacy in engineering retention. The second study explores which student learning experiences are most likely to increase student confidence in engineering skills and if there are differences in these relationships among students of different gender, and achievement level, as measured by high school GPA and ACT Math scores. The study takes place at Louisiana Tech University through the Living WITH the Lab (LWTL) first-year engineering curriculum that serves over 500 students each year. Results indicate that frequency of hands-on activities is important for males and females in building confidence in their engineering skills. For females, however, the relationship is more complex.

Biography:
Dr. Marisa Orr is an assistant professor of Mechanical Engineering and an Associate Director of the Integrated STEM Education Research Center at Louisiana Tech University. She earned her PhD in Mechanical Engineering and a Certificate of Engineering and Science Education at Clemson University and then spent two years as a postdoc in the School of Engineering Education at Purdue University before coming to Louisiana Tech in Fall 2012. Her current research focuses on student progress, persistence, and pathways using longitudinal student data from the Multi-Institution Database For Investigating Engineering Longitudinal Development (MIDFIELD) and Louisiana Tech University. Marisa has been active in the American Society for Engineering Education (ASEE) since 2006 and is currently on the Educational Research and Methods Division Board. She is also Vice President of Sigma Xi- the Scientific Research Society, and a member of the American Society of Mechanical Engineers (ASME). Her faculty webpage is: http://www2.latech.edu/~marisao/