

Faculty Take Time to “Live with the Lab”

Twenty-one engineering faculty members from across the nation visited Louisiana Tech from July 12-15 to learn about Tech’s first-year engineering experience and to brainstorm on the way forward for engineering education. The workshop, funded by the Division of Undergraduate Education at the National Science Foundation, immersed the participants in Louisiana Tech’s special brand of project-centered education which boosts experiential learning through student ownership of the “laboratory.” The new curriculum, called “Living with the Lab,” allows students to perform laboratory and design activities in their own space and on their own time schedule. Workshop participants completed many of the same projects as first-year engineering students while the workshop leaders demonstrated how technology, fabrication, software skills, engineering fundamentals, communication skills, and broadening issues can be woven together to create an exciting classroom environment.

The workshop was hosted by the faculty group at Louisiana Tech who developed the new curriculum, including Mark Barker, Kelly Crittenden, Stan Cronk, John Easley, David Hall, Jim Nelson and Mike Swanbom. David Hall, project director for the National Science Foundation grant, said that it was “great to see the participants have fun while completing the robot challenges and other course projects. We have been excited about our new curriculum for some time, so it was rewarding to see faculty from other universities become excited about what we are doing here at Louisiana Tech.”

Workshop participants will be taking what they have learned back to their home institutions to improve their first-year engineering experiences. Kirk Reinkens, an Instructor and the Recruitment and Retention Coordinator at Washington State University, indicated that “The LWTL [Living with the Lab] workshop provided me time and encouragement for looking through our freshman experience with a LWTL lens.” Brent Donham, Head of Industrial Engineering & Technology at Texas A&M University-Commerce, observed that “The Living with the Lab workshop is engaging and challenges engineering educators to rethink the new student or freshmen learning experience.” Steve Brandon, Lecturer in Engineering and Science Education at Clemson University, reflected “It has inspired me to think deeply about our engineering education and provided me with ideas for our own program.” Rich Whalen, Associate Academic Specialist in the Department of Mechanical and Industrial Engineering at Northeastern University observed “The program insights are inspirational and we are now motivated to implement a similar program at our University.”

Based on his experience this week, participant Gerald Recktenwald, Chair of Mechanical and Materials Engineering at Portland State University, noted that “Living with the Lab uses problem-based pedagogy to motivate, challenge and teach students to *be* engineers right from the start of their education.” Lydia Prendergast, Assistant Dean for Academic Affairs in Rutgers University School of Engineering, described Tech’s freshman engineering curriculum as an “innovative and novel engineering design experience.” Bradley Layton, Associate Professor in Mechanical Engineering and Mechanics at Drexel University, commented “The laboratories at

Louisiana Tech are enviable. If every first-year curriculum across the country were to have the facilities and talented faculty that first-year students at Louisiana Tech have, we would see the quality of engineering graduates increase nationwide. This is a great example of well-spent NSF funding.”

Hall hopes to see other institutions adopt a similar approach based on student-owned hardware and software. Hall says that the falling cost and increasing sophistication of devices to measure and control the performance of engineering systems has changed the way that engineering education can be approached. “Putting the ownership and maintenance of the laboratory into the hands of the students motivates student learning and broadens the spectrum of projects that can be tackled, building student confidence, practical skills, and creativity.” Jim Nelson, Associate Dean for Undergraduate Studies at Louisiana Tech, says that project-centered learning “allows students to build the critical skills and attitudes that they will need to hit the ground running when starting their engineering careers.”