

## FOCUS ON CONSTRUCTION, ENGINEERING &amp; ARCHITECTURE TRENDS

# Breeding engineers with an entrepreneurial mindset

By **KENNERLY CLAY**

Special for Lehigh Valley Business

Ask engineers what they do and they probably wouldn't say, "We help people."

But that's exactly the spirit of the new breed of engineer that will come out of Lafayette College. It's thanks to a \$222,500 grant from the



Hummel

Kern Family Foundation that will help embed an entrepreneurial way of thinking in students who go through Lafayette's engineering program.

The school is now part of the Kern Entrepreneurial Engineering Network, a collaborative of colleges and professors dedicated to cultivating the core principles of the entrepreneurial mindset in their students.

"In the past, if you had an engineering degree you could pretty much write your ticket to financial success for a lifetime, but the 21st century requires more," said Scott Hummel, Jeffers Director of Lafayette's Engineering Division. Hummel noted global competition and that the classes taught in Easton, Pa., are the same ones being taught in Beijing and Mumbai.

Another phenomenon that has altered the playing field is the availability of massive online open courses, which offer free, unlimited access on the Web to technical information.

Hummel cited the example of a Massachusetts Institute of Technology circuit class that was offered for free online and

250,000 people registered. Even with the 50 percent dropout rate, participation was at 125,000.

"[The information] has become so readily available that students need to get better at what they're doing," he said. Simply adding more STEM [science, technology, engineering, math] is not educating the next leader. "You can't out-teach somebody."

## MAKE THE WORLD A BETTER PLACE

The Kern grant will enable Lafayette faculty to introduce engineering students to the knowledge, perspectives, skills, values and mental agility that contribute to an entrepreneurial mindset fueled by innovation, creativity and a burning desire to bring value to people's lives.

"Engineering is about people," Hummel said, "the pursuit of making the world a better place and helping people live longer, happier, healthier lives."

"When we're at our best, that's what we're doing. And that's what we need to teach our students."

Hummel said he also believes that this message of contributing to the world may attract and keep a lot more people in STEM — particularly women and minorities.

## CURIOSITY, CONNECTIONS, VALUE

What this entrepreneurial view of the world looks like in the classroom will vary.

During this first semester of implementation, 14 engineering faculty members are



FILE PHOTO/KEN WHITE/ZOVKO PHOTOGRAPHIC LLC

At Lafayette College's Acopian Engineering Center, student Ralph Blumberg smooths portions of the frame as he and other students work on a race car as part of a competition by SAE International, formerly known as the Society of Automotive Engineers.

implementing the X-Trained Engineering Program by modifying existing courses and cultivating three key attributes in students:

- (1) Curiosity: Demonstrating curiosity about the changing world and considering unconventional views when exploring solutions.
- (2) Connections: Integrating information from many sources to gain insight and thinking strategically as well as operationally.
- (3) Creating value: Identifying opportunities to create added value while persisting through and learning from failure.

## SEEING OPPORTUNITIES

Students may be challenged to create a busi-

ness model, for example, and investigate the market for a product with the intention of relating the course to a real-world problem they can help solve.

"If they're building a product," Hummel said, "first ask, what is the vision of our organization, what is our mission, where are we trying to take it? Then, what resources do we need, what do we need to be thinking about, what does the market need, what does the customer need?"

"I tell my students, 'When you see a problem, you need to see an opportunity.' How can you turn that into an opportunity to make someone's life better, to move your company forward? We're thinking about it much more holistically."

## MAKING LEADERS

Hummel also noted the importance of diversity of thought in solving the world's problems.

"Technical solutions don't generally solve problems," he said. "If we know how to clean water, how come everybody on the Earth doesn't have access to fresh water? It's not just technology. It's economic; it's political."

Today's problems require thoughtful, innovative approaches and standout leadership from the next generation of engineers, which is the kind of support the Kern grant will provide.

"More than ever, our students are going to be prepared to be the next leaders in the world," Hummel said. "That's the goal. To make the world a better place, and have our students lead doing it."

## IS YOUR BUSINESS EXPANDING?



Lehigh Valley Economic Development Corp. can help.

**FINANCING RATES AS LOW AS 2%.**



Call 610-266-6775 or visit [LehighValley.org/Financing](http://LehighValley.org/Financing)



## Carroll Engineering Corporation

Water Facilities Engineering - Wastewater Engineering - Municipal Engineering - Structural Engineering - Traffic & Transportation Engineering - Civil Engineering - Environmental Engineering - Planning & Site Design - Landscape Architecture - Surveying - Construction Management - Geographic Information Systems



Corporate Office: 949 Easton Road, Warrington, PA 18976 - 215.343.5700

630 Freedom Business Center  
Third Floor  
King of Prussia, PA 19406  
610.489.5100

101 Lindenwood Drive  
Suite 225  
Malvern, PA 19355  
484.875.3075

105 Raider Boulevard  
Suite 206  
Hillsborough, NJ 08844  
908.874.7500

[www.carrollengineering.com](http://www.carrollengineering.com)



## Industrial & Environmental Contracting

- Plant Shut-Down Services
- Vacuum Loading
- Facility Maintenance
- Waste Removal
- Piping
- Tank Handling
- Confined Space Entry
- Demolition



**SUPPORTING MANUFACTURERS FOR OVER 22 YEARS!**

JMT Environmental Technologies, Inc Lehigh Valley, PA  
610-837-8000 • [www.jmtenv.com](http://www.jmtenv.com) • PA28975