

EngineeringNews



DEAN'S MESSAGE

You could feel the energy in the room. The Rowan Hall atrium was filled with people – alumni, industrial partners, faculty and supporters. Our Celebration 2010 event on April 9 recognized the 10th anniversary of the first graduating class and showcased 10 years of engineering degrees, representing 837 graduates pursuing careers in engineering or building on their education to succeed in areas such as medicine and law.

Business and industry had a strong presence at this momentous event, with Henry Rowan reflecting on the college he made possible and Public Service Enterprise Group (PSEG) serving as a corporate sponsor for the event. We offer many thanks to Bob Braun, senior vice president of nuclear operations for PSEG, for his presence and support.

As we continue to move forward, we are confident that the College of Engineering stands on a firm foundation. It was my special pleasure to welcome the architect of that foundation, the founding dean, Dr. James Tracey, for the evening.

I hope you enjoy this newsletter's highlights, showcasing the scope and depth of projects that are emerging from the College.

Regards,

Dianne Dorland

Dianne Dorland
Dean of Engineering

COE Takes to the Road With New Program

David Ramsay tossed clubs, balls and a Chinese yo-yo in the air in a sunlit stairwell at Glassboro Intermediate School (GIS).

No doubt his audience of 55 eighth-grade science students was having a good time – and getting an education about the demanding field of engineering.

Ramsay, a junior civil and environmental engineering major from Wenonah, was part of a team led by Civil & Environmental Engineering chair Dr. Kauser Jahan that kicked off the College's newest and one of its most vibrant outreach programs at the nearby school when it launched Engineers on Wheels in February.

Supported by the Lawrenceville-based Edison Venture Fund and John Martinson Sr., managing partner, Engineers on Wheels features a van packed with activities to introduce various engineering disciplines to K-12 students in South Jersey and beyond.

Hands-On Lessons

Juggling taught the younger students about gravity and Newton's Laws, relating them specifically to engineering. The Rowan

team also taught some other basic and fun engineering principles while working with the Glassboro students to make lip gloss, build bridges and explore baseball aerodynamics on computers.

Jahan explained engineers' roles in helping people – from purifying drinking water to developing X-rays to creating cell phones. Outside in the van, the Rowan team taught the youth about everyday scientific principles and how they are important in engineering as the Glassboro students crowded around a 46-inch flat-screen television monitor and raced a car around a virtual track.

Appreciating Technology

These activities stimulate teenagers to observe how technology can be applied to improve quality of life, said John Martinson Jr., an investment associate with Edison Venture Fund. "Students begin to appreciate the potential for rewarding engineering careers," he said.

"The United States is falling behind other countries in producing engineers and other professionals in technology fields, so it's critical we reach our youth and introduce them to the world of engineering, science, technology and math," said Jahan, who was assisted with the project by Dr. Krishan Bhatia, an associate professor of mechanical engineering, and Dr. Issam Hafez Abi-El-Mona, of the Teacher Education Department.

"Engineering is very creative," Jahan said. "To be a good engineer, you have to be good in your courses now, especially your math class, your science class. You don't need to love them, you just have to be good at them."

"I believe that so many of our youth today do not know what an engineer is. ... Rowan Engineers on Wheels offers students an opportunity to learn what engineers do by participating in ... experiments," said Denise Barr, a GIS science teacher. "These experiences are so much more meaningful than if I had them read an article or write a research paper. It is wonderful for the students to meet people in the field who can share their knowledge with them."



John Martinson Jr. (at rear of van) and **Zachary Januik**, '09, a graduate student in mechanical engineering from Mountainside, assist students in racing a car around a virtual track.

Students Soar to New Heights

Opinions conflict on whether Ben Franklin actually performed his legendary kite-and-key experiment, but there's no doubt he would be proud of innovative kite research Rowan College of Engineering students are conducting to harness high-altitude wind power to generate energy.

The College initiated the EHAWK (Electricity from High Altitude Wind with Kite) project at the suggestion of Kyle Fitzpatrick, '07, '08, mechanical engineering technician and a kiteboarding enthusiast. Researchers have long mused about the energy potential of kites, but universities and startup companies only recently began investigating the concept. "Advancements in technology allow the idea to be actually possible now," Fitzpatrick said.

These kites aren't the typical flat-panel toys you would find in your local discount store, however. Measuring 20 to 50 square feet, the nylon parasail-type kites are tethered to generators. A joystick operates the motor that spins a control bar attached to the kite, guiding it into a steady-state figure-8 flying pattern to generate the maximum amount of power. Although students are working with smaller prototypes, eventually the scale could be increased up to 1,000 square meters.

Kites have potential advantages over wind turbines as an alternative energy source. "As you ascend higher, the wind gets

stronger," said Dr. Hong Zhang, associate professor of mechanical engineering. "They're making the wind turbines higher and bigger, but there is a limit to how high you can build them."

"We get to learn what goes on behind prototyping and getting something out to test before going full scale."

However, an inexpensive kite line can be extended much higher. "A kite is very versatile," Zhang said. "In the daytime in the summer, when we need a lot of energy, we could extend the string of the kite very high. At night, when we do not need that much energy, we could just lower it."

Students are enthusiastic about the project. "Because the technology is so proprietary and in its infancy stages, we get to learn what goes on behind prototyping and getting something out to test before going full scale," said Paul Natalino, a senior mechanical engineering student from Franklinville.

"One of the added benefits to the EHAWK project is that we get to design parts, test them and see something we



Kyle Fitzpatrick, Taylor Kirk, Paul Natalino, Dr. Hong Zhang, and Nick Mirto (left to right), a junior mechanical engineering major from Toms River, test kite technology.

built actually work or fail, and then we get to test them again and work on the design so we have something that is efficient," said Taylor Kirk, a senior mechanical engineering student from Oceanport.

This technology could have many applications, Zhang said. When natural disasters strike, kites could be valuable in recovery efforts, especially in remote zones without fuel for emergency generators. "It's very easy to ship a kite," Zhang said. "They can attach it to the generator and fly the kite to generate power. When you have power, you can sanitize the water and perform other tasks."

Ultimately, students will continue to explore the vast potential of kite technology, enabling alternative energy research at Rowan University to soar to amazing new heights.

Chilean Professors Explore Rowan Engineering Programs

That Rowan University's College of Engineering has a reputation as providing an excellent – and unique – education is nothing new. That professors are traveling from as far as South America to learn about how to pattern their own program after some elements of Rowan's just may be.



In March, Nancy Ebner Gerschberg and Roberto Jimenez Ramirez from Arturo Prat University in Iquique, Chile, spent two weeks on campus gathering information to bring back to their school. The two chemical engineering professors originally learned about the University when they met Dr. Zenaida Otero Gephardt, a Rowan chemical engineering professor, in 2009 when she presented a workshop on accreditation in their country.

The visitors are part of a project with Chile's Ministry of Education that is focusing on enhancing student retention and moving toward accredited programs,

Nancy Ebner Gerschberg and Roberto Jimenez Ramirez from Arturo Prat University in Iquique, Chile, toured the Rowan College of Engineering.

according to Gephardt. Ebner Gerschberg said she and Jimenez Ramirez particularly were interested in learning more about the Rowan Engineering freshman clinics and the College's relationships with high schools through such programs as Project Lead the Way.

Jimenez Ramirez, who has visited a few U.S. schools, said what they observed at Rowan was very "attractive" to them, and they believe Rowan Engineering offers an excellent education vehicle that they can apply at their own school.

The visit was important for Rowan as well. "That's the whole point of collaborating," Gephardt said. "We all talk of the global engineer of the future. You're not going to have that if universities don't collaborate."

College of Engineering Celebrates 10 Years of Graduates

An atmosphere of jubilation filled the Rowan Hall atrium during Celebration 2010 on April 9, marking 10 years since the first class of engineers graduated from Rowan University. Jazz strains drifted through the air as faculty and alumni mingled with industry partners and gratefully shook the hand of their generous benefactor, Henry Rowan.

As clusters of attendees reconnected, they recalled a remarkable era in the history of Rowan University that began when Henry and Betty Rowan pledged \$100 million to then-Glassboro State College, directing the college to build an extraordinary engineering school to train engineers in a fresh and innovative way.

The reception, sponsored largely by Public Service Enterprise Group (PSEG), as well as 12 supporting companies, commemorated the success of a program that has graduated 837 students, developing a reputation for its hands-on, minds-on approach to training global engineers equipped to conquer challenges of the future. The College was fueled by extensive support from individuals, businesses and organizations, with hundreds of industrial partners providing scholarships, serving as advisors, sponsoring clinics, offering internships and hiring graduates.

“The distinction the College of Engineering has achieved in such a short time – to have the chemical engineering program ranked Number 2 and for the entire college to be ranked Number 15 among

undergraduate and master’s institutions across the country by *U.S. News & World Report* – is very, very impressive,” said Robert Braun, senior vice president, PSEG Nuclear, Hancocks Bridge.



Henry Rowan and Dr. James Tracey, founding dean, are surrounded by graduates of the Class of 2000 of the College of Engineering.

This triumph has drawn attention from students and their prospective employers, said Rowan’s president, Dr. Donald Farish. “Professional engineers who are hiring our students invariably tell me how well prepared they are. So there’s now preferential hiring of Rowan graduates. That’s the hallmark of a good program.”

But the work continues. There is nothing more important to the continued excellence of our country than education and there is nothing more important than technical expertise, Henry Rowan said, leaving alumni with the charge to “get out there and make a difference, and promote the best of U.S. technology.”



Robert Braun, senior vice president, PSEG Nuclear, Hancocks Bridge, speaks to guests at Celebration 2010.



Henry Rowan; Dr. Dianne Dorland, dean; and **Dr. James Tracey**, founding dean (left to right), proudly mark 10 years of graduates of the Rowan College of Engineering.

“The most satisfying thing is to have these students from the class of 2000 describe what they’re doing and how impressed they are with the education they received here at Rowan College of Engineering. And in many cases these students have branched out into related areas, like patent law, for example. That’s very exciting because one of the things that Rowan has told students is, you don’t have to spend the rest of your life on the edge of a lab table. With a good engineering background, there are many, many things you can do.”

*Dr. James Tracey,
Founding Dean,
College of Engineering*

“The most important thing for us is to continue to deliver a sustainable educational program. New technology, new methods, new opportunities always require new investments, so we not only have to maintain and deliver what we have, but we have to be constantly reinvesting in ourselves. Our goal is to have our students experience today what they’re going to need to know for tomorrow.”

*Dr. Dianne Dorland,
Dean, College of Engineering*

“Early on we worked on practical projects instead of just book work. There was a lot of team building within the engineering groups. I was an electrical engineering major and I got to multitask with chemical, mechanical and civil engineers.”

*Ken Gemmell,
Class of 2000, RF Engineer,
Thales Communications Inc.*



The Rowan University Career Fair connected employers and students from a variety of technical, business, communication and other fields.

College of Engineering Reaches Out to the Community This Summer

Through the following summer programs at the College of Engineering, students and teachers experience the essence of engineering:

■ **AWE Workshop for Middle School Girls**, June 29 and 30 and July 1, 2010

In single-day workshops, the Attracting Women into Engineering program introduces girls entering seventh or eighth grade to multiple disciplines of engineering, focusing on hands-on experiments and professionalism.

■ **High School Scholars Program**, July 11 to July 15, 2010

In the High School Scholars Program, rising high school juniors and seniors experience hands-on activities, seminars and field trips to better appreciate the excitement and challenges of an engineering career.

■ **Engineering Clinics for Teachers**, July 11 to July 15, 2010

Engineering Clinics for Teachers exposes educators to engineering basics, offering strategies to help them integrate engineering content into their classrooms.

■ **Project Lead the Way Teacher Training**, July 18 to July 30, 2010

Select high school teachers are trained to implement project-based, pre-engineering curricula in their classrooms to inspire students to pursue engineering and technology careers.

■ **RISE High School Engineering Workshop**, July 20 to 22, 2010

Through Rowan's Introduction for Students to Engineering three-day workshop, high school students connect with faculty and Rowan students to gain an understanding of engineering through hands-on projects, lab clinics and campus/industry tours.

For more information on any of these programs, call (856) 256-5300 or visit www.rowan.edu/engineering.

Engineering News

Volume XI, Issue II • Spring 2010

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Engineering News is published twice annually by the College of Engineering to highlight the achievements of its faculty, staff and students. We welcome comments and suggestions.

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