

EngineeringNews



DEAN'S MESSAGE

Students sometimes see engineering, math and physics careers as isolating or not so helpful to society. The experiences and influence of our students in our clinics and particularly in the Engineers Without Borders™ (EWB) program belie that thought. In fact, we need to stress that engineering uses math and science to help people. You don't have to work in isolation or focus on numbers every day. We're working to carry that message to our communities and attract the best possible students to Rowan.

I believe EWB is one more example of how engineering is a foundation degree for many, truly the liberal arts degree of the 21st century. As educators, our goal is not what graduates need for that first job, but the tools necessary for a productive lifetime.

I'm proud to note the dynamic balance we promote between research and teaching. While students are encouraged to stretch and be innovative, our faculty persistently earn recognition for excellence in teaching. This ability to promote professional development in the classroom reaffirms our educational mission. Please enjoy this brief sampling of activities in the College of Engineering with these spring highlights.

Dr. Dianne Dorland
Dean of Engineering

Rowan Engineering Team Travels to Thailand for Engineers Without Borders

A Rowan engineering faculty and student team chose an exotic place for spring break 2005, but it wasn't for a vacation.

Instead, as volunteers with Engineers Without Borders™, the team traveled to the Chiang Mai Province of Thailand with the goal of making a difference for children by installing a distribution system that will provide additional water to meet a local school's current and projected needs.

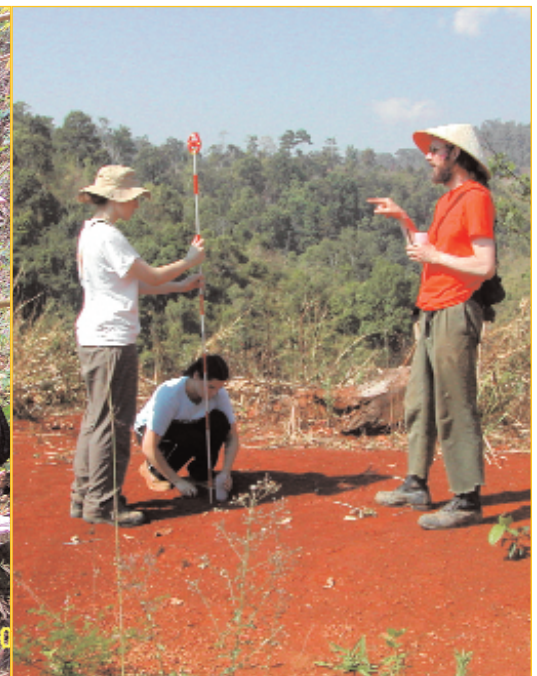
The Rowan group had been working for months to design the water distribution system, identify proper equipment to use for water quality testing and surveying work, raise money for the trip and learn about the culture.

"The project helps the people, providing them with water, which they don't have in adequate supply," said Dr. Yusuf Mehta, assistant professor of civil and environmental engineering. Mehta said the Rowan group,

along with the Columbia University Engineers Without Borders™ chapter, constructed a two-mile long pipe to supplement an existing pipe in supplying the village with water and did preliminary work for a possible agricultural basin.

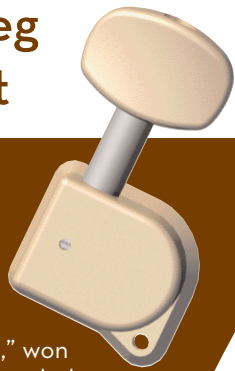
Mason DeFrank (CE), a junior from Collingswood, said, "After months of preparation and a 24-hour flight, I found the people (of Thailand) more appreciative than I could have imagined. It was a wonderful and humbling experience to live with a family so generous and content with its means, while the living standard is so much less than my family enjoys."

This is the second project Rowan engineering students have worked on with Engineers Without Borders™. Last year, they teamed with Lafayette College in Pennsylvania to design irrigation and wastewater systems for the Yoro district of Honduras.



ENGINEERING ELSEWHERE . . . Thai villagers recently hosted a Rowan engineering faculty and student team, which installed a water line through an Engineers Without Borders™ project.

Engineering the Musical: Alums' Tuning Peg Wins U.S. Patent



Fred Hovermann (BS ME '01, MS '03) and Pete Ferrara (BS ME '01) merged the musical with the technical in a junior/senior clinic project, and the duo's resulting device, "Tuning Peg Construction," won U.S. patent #6,703,547, the first awarded to College of Engineering students.

The project began when Hovermann, who has played guitar since he was seven, thought his idea, to create a guitar tuning peg that would not shift when jarred, fit with the clinic's opportunity to pursue entrepreneurial projects. With the encouragement of their professors and funding from the National Collegiate Inventors and Innovators Alliance, he and Ferrara developed a peg that needs to be pressed before it will turn and otherwise keeps the same tension and pitch.



PATENT SUCCESS . . . Fred Hovermann (left) and **Pete Ferrara** invented a guitar tuning peg in a clinic project. The peg won the first patent awarded to Rowan College of Engineering students.

Now a product engineer at Filtration Group in Joliet, Ill., Hovermann is responsible for designing and developing new products and improving existing ones for the HVAC air filter manufacturer. Ferrara, who earned his master's degree at Penn State, now works for his graduate advisor as a research assistant on such projects as measuring the heat flux and flame spreading of the burning solid propellant in the NASA Space Shuttle's reusable solid rocket motors and on design projects for the U.S. Army.

Geographic distance between the pair complicates their plan to license the tuning knob to a manufacturer, but with marketing experience gained in his current position, Hovermann believes that this next step will happen soon.

It's All in the Nozzle: Rowan Develops Plastic Alternative Through Contract with FAA

This spring, Rowan engineers put a new fire extinguisher nozzle to the test to determine whether a plastic prototype performs as well as a metal model. Under a one-year contract awarded to the University by the Federal Aviation Administration's (FAA) William J. Hughes Technical Center, seniors Tim Vaughn (ME), West Berlin, and Dan Stephens (ME), Moorestown, worked on developing an alternative to a fire extinguisher nozzle patented by FAA engineer Bob Filipczak.

"This is a case where an FAA engineer designed a product to meet an aviation need, but the product may serve other purposes well beyond the realms of aviation," said Deborah Germak, FAA Technology Transfer program manager.

That's where Rowan comes in.

Dr. John Chen, chair of Mechanical Engineering, explained, "Filipczak's nozzle forces carbon dioxide through U-turns as it traverses a tortuous path from the center to the outer annulus of several concentric tubes to result in a very fine, loose snow [dry ice] that puts out a fire by blanketing it and excluding the oxygen."

The Rowan project's goal is to develop a potentially disposable, less-expensive version of the brass-and-copper original, which takes Filipczak two hours to manufacture by hand.

Market analysis is also part of the project. Rowan M.B.A. students are determining what would make commercial manufacturing of the nozzle feasible and evaluating its possibilities for wider adoption and use in non-aviation applications.

The engineering students soon will answer their questions about the material's strength, durability and ability to produce a fine snow. Should the answers to these questions be positive, a more cost-effective and efficient fire extinguisher could result.



Dr. Dianne Dorland, dean of Rowan University's College of Engineering, and **Ronald Esposito**, FAA senior corporate officer, discuss the partnership between the College and FAA.

LEADING . . . *Students, like those in the IEEE team that coordinated a springtime conference, gain leadership skills through engineering professional groups.*



Student Professional Society Chapters Enrich Education

About 200 students from 22 universities in New Jersey, Pennsylvania, Delaware, Maryland, Ohio, Washington, D.C., and West Virginia crowded Rowan Hall for the April 9 Student Activities Conference sponsored by the student branch of the Institute of Electrical and Electronics Engineers (IEEE). The annual event featured robotics competitions, a project showcase, a technical paper competition and a new ethics competition designed to encourage engineers to think seriously about the societal impact of technology.

“ Student professional society chapters reinforce and amplify what is happening in the classroom . . . ”

*Dr. Steven Chin
Associate dean of the College of Engineering*

Graduate student Hector Suarez (ECE '04), Millville, coordinated the program with sophomore Joe Lopez (ECE), Williamstown; senior Tim Osedach (ECE), Hazlet; and senior Amy Vanderslice (ECE), Norristown, Pa. Osedach said that organizing the conference and participating in student branches of engineering societies build leadership and management skills.

IEEE is one of several professional societies at the College that are represented by student chapters and serve an important role.

Dr. Steven Chin, associate dean of the College of Engineering, said, “Student professional society chapters reinforce and amplify what is happening in the classroom, further emphasizing our hands-on, minds-on approach to engineering education. They also enhance the close faculty-student relationships that characterize the College.”

Engineering faculty members serve as advisors for the groups, which in addition to IEEE include the American Institute of Chemical Engineers (AIChE), the American Society of Civil Engineers (ASCE), the American Society of Mechanical Engineers (ASME), the Society of Automotive Engineers (SAE) and the Society of Women Engineers (SWE).

The chapters involve numerous engineering students in challenges similar to those they will face professionally, such as the chemical-reaction car race (AIChE), the concrete canoe race (ASCE) and the Mini-Baja® competition (SAE). In addition, Rowan's SWE chapter participates in activities to promote women in the engineering profession, such as the College's summer program, Attracting Women Into Engineering, and the Girl Scouts Design and Discovery Day.



RAISING PALMER . . . *Colleen Boland (ME), a senior from Turnersville, is one of a handful of Rowan students raising puppies at Rowan for The Seeing Eye, Morristown. Palmer, a yellow Labrador, lives, attends classes and travels just about everywhere with Boland as part of his socialization training. Now almost fully grown, Palmer has gone from sleeping in engineering classes to wanting to play nonstop, according to Boland, who has been devoting a lot of time and energy to the dog since he arrived in July.*

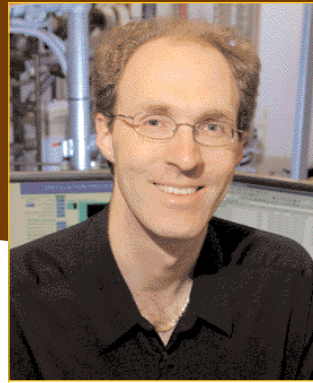
ASEE Honors Rowan's Dr. Kevin Dahm

For his vision and contributions to engineering education, Dr. Kevin Dahm, associate professor of chemical engineering, received the 2005 Ray W. Fahien Award from the Chemical Engineering Division of the American Society for Engineering Education (ASEE). The ASEE presents the award annually to an educator within the first 10 years of faculty appointment.

Dahm said, "At Rowan, we're all interested in engineering pedagogy, and I'm proud of the fact that I'm the fourth Rowan faculty member to win this award since 1999. It shows there are people outside of Rowan who agree we're doing something special here."

Currently, Dahm is working on a project designed to help students better understand how they learn through the use of writing. The National Science Foundation (NSF) funded the effort, a collaboration with Dr. James Newell, chemical engineering professor; Dr. Roberta Harvey, composition and rhetoric assistant professor in the College of Communication; and Dr. Heidi Newell, assessment consultant. NSF also supported two of Dahm's other curriculum projects.

He also finds time to collaborate with his father, Dr. Donald Dahm, a Rowan associate professor of chemistry. Recently the father-son team established the Dahm equation, a chemistry breakthrough that took them 10 years to perfect. The Dahms developed an equation that describes the amount of chemicals in an unclear or powdery mixture without resorting to complex statistical techniques.



Dr. Kevin Dahm

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