

EngineeringNews



DEAN'S MESSAGE

Recently, the Corporation for National and Community Service announced a new \$40-million program (subject to Congressional appropriation) to engage higher education institutions in service-learning projects.

This type of emphasis on service in education and on societal impact has grown steadily, and students frankly assess their college choices based on opportunities to serve as well as to learn. At Rowan University, this ambition to seek responsibility through service is seen in the actions of our students and faculty.

This newsletter presents elements of service prevalent in a selection of activities while emphasizing that our faculty and students value developing emerging technologies and promoting advanced study. By engaging in volunteer service activities that build on engineering strengths, promoting the development of new technology and earning recognition for teaching, our faculty and students are demonstrating their commitment to engineering, education and the community.

Rowan Engineering is setting a brisk pace this year. I hope you enjoy this fall's highlights.

Dianne Dorland
Dean of Engineering

Rowan Teams Tackle Alternative Fuels

As gas prices recently have traveled up, down and up again, Rowan University professors and students have been working on projects that may make drivers' journeys to the fuel pump easier.

“The overall goal is to improve our ability to produce ethanol from renewable sources.”

Drs. Brian Lefebvre and Mariano Savelski, assistant and associate professors of chemical engineering, respectively; Dr. Gregory Hecht, chair of the Biological Sciences Department; Dr. Patricia Mosto, interim associate provost; and students have been working on developing improved bacterial strains for bioethanol production under a National Science Foundation grant.

“The overall goal is to improve our ability to produce ethanol from renewable sources. This will help relieve our national dependence on foreign oil and establish a path to energy independence,” Lefebvre said.

The project has focused on creating enhanced bacterial catalysts for the transformation of waste biomass, such as corn stover

— stalks and leaves left after corn has been combined — to ethanol.

In another research project, Drs. Anthony Marchese and Krishan Bhatia, associate and assistant professors of mechanical engineering, respectively, and Dr. Robert Hesketh, chair of the Chemical Engineering Program, and their students have been researching nitrogen oxide (NO_x) emissions from biodiesel fuels under a grant from the New Jersey Department of Transportation.

“Biodiesel decreases most harmful emissions but increases NO_x slightly,” Marchese said. “Most studies have shown that NO_x increases slightly, and this has impact on atmospheric pollution, particularly ground-level ozone. So this is a problem, and it has made people a little bit wary of using biodiesel.”

Marchese and his colleagues have been testing school buses and other vehicles that use biodiesel to quantify their actual emissions. “What we're finding is the results aren't as bad as people expect,” said Marchese, who also has been working under a separate National Science Foundation grant to try to understand why biodiesel fuels increase NO_x.



NATURAL RESOURCE . . . *Dr. Brian Lefebvre (left) and chemical engineering students Alvin Addu '08 (center) and Richard Pelletier '06 are exploring the transformation of corn stover into ethanol.*

Development Council Honors Engineering Dean

The Southern New Jersey Development Council in September honored the College of Engineering's dean, Dr. Dianne Dorland, and nine other women for their contributions to the region at the 45th Annual Distinguished Achievement Awards Reception.

The Development Council presented Dorland with a Leadership in Business award, recognizing her work uniting Rowan Engineering and the business community.

"The College of Engineering's focus is a hands-on, minds-on approach, and it is our close link with industry that allows for that," Dorland said. "This award recognizes our outreach to industrial partners."

The night's theme, "A Celebration of Women," made Dorland feel proud to be part of a group of strong women shaping development of the region. Standing on stage next to recipients such as former Gov. Christine Todd Whitman and Assemblywoman Mary Preverte, Dorland said she felt honored, but humbled. "It wasn't until I was with the entire group that I realized the impact the guests and recipients have on South Jersey," she said.

Dorland, who sees higher education as a keystone of South Jersey growth, said the award speaks volumes for Rowan. "It means our outreach efforts are being felt. Here we allow real education in engineering to interface with real business. Our work touches the fabric of the state," she said.

To Dorland, recognition is a beginning, not an end. "An award is not just for past accomplishments, but an encouragement to do even more in the future," she noted.



HONORED . . .
Southern New Jersey Development Council chair **Barbara Armand** (right) presented an award to **Dr. Dianne Dorland**, dean.

Rowan Alumni Excel in Doctoral Programs

The pace is brutal and the challenges are many for Amip Shah (ME '02) as he completes his doctorate in mechanical engineering at the University of California – Berkeley. But he's taking the workload and pressure in stride – earning his bachelor's degree at Rowan equipped him to meet the challenge.

"The most valuable skill I learned at Rowan was project management – the ability and the confidence to run projects from start to finish. Much of my research in graduate school has been driven by the 'design, analyze, test' mantra of the engineering clinics," Shah said.

Douglas Gabauer (CE '01, MS '03), who is studying human injury at Virginia Polytechnic Institute and State University, agrees that the engineering clinics helped prepare him for doctoral work. For Gabauer, the "Rowan experience" of team-oriented and multidisciplinary projects was of utmost importance.

Similarly, Rachel Specht (ChE '03) credits Rowan for providing strong fundamentals as well as teaching her to think creatively, which has given her the ability to blend chemical and biological engineering in research at Colorado State University.

Like Shah, Gabauer and Specht, close to a third of Rowan Engineering graduates opt to pursue master's or doctoral degrees each year. Once finished with their doctorates, these Rowan alumni may look forward to positions similar to that of Dr. Tim Francis (ChE '00), who earned his doctorate at the University of Massachusetts. He chose to work for BASF in Ludwigshafen, Germany, where he is a laboratory leader who develops thermoplastic foam and manages a team of technicians. Like other Rowan alumni, he said multidisciplinary teams made a difference in furthering his education and preparing him for a profession.



GOOD FOUNDATION . . .
Rowan prepared **Amip Shah** to tackle doctoral work in mechanical engineering.

Alumni also said Rowan Engineering faculty members were critical to their progress. Frank Romanski (ChE '05), now in the Rutgers University chemical and biochemical engineering program, said his professors offered sound advice and allowed him to gain valuable knowledge about graduate school, undergraduate work and life in general. Rowan alumni have pursued graduate degrees at such other prestigious institutions as Harvard, Princeton, Stanford, Penn State, Clemson and Drexel universities; Worcester Polytechnic Institute; the University of California – Irvine; and the University of Notre Dame. Alumni enrolled in Ph.D. programs also include:

Theresa (Gouker) Cassino (ChE '00),
Virginia Polytechnic Institute and State University
Jason DiTonno (ChE '00), University of Delaware
Clay Emerson (CE '00), Villanova University
Carolyn Hampton (ME '05),
Virginia Polytechnic Institute and State University
Scott Papson (ECE '03, MS '04),
Pennsylvania State University
Disha Sheth (ECE '03),
Case Western Reserve University

HELPING HANDS . . . College of Engineering faculty and students, including **Dr. Jennifer Kadlowec** (left photo), are volunteering in Mississippi.



Engineering Clinic Assists Gulf Coast Town Hit by Katrina

Not much time passed between Hurricane Katrina blasting the Gulf Coast and Rowan Engineering faculty and students swinging into action.

Since September, students and faculty – led by Dr. John Schmalzel, chair of the Electrical and Computer Engineering Program, and mechanical engineering associate professor Dr. Jennifer Kadlowec – have been volunteering with the school district in Picayune, Miss.

As part of a clinic project and volunteer effort, teams have driven to the town on a rotating basis to handle tasks that included roofing, renovating interiors and rebuilding athletic facilities in the district, whose superintendent once attended Rowan. The University has gotten behind the project as well, contributing funds to assist the students with travel, food and related costs.

"This is a student-led project that is faculty supported. We've got great people doing this," said Schmalzel, whose maternal family is from Mississippi. "That's the best type of project we can do."

Students are using skills they've developed in the engineering

program while helping others. Faculty and staff members have been right beside them hammering nails, raising money and roughing it in an area that suffered from the Category 3 hurricane that primarily hit Louisiana and Mississippi in late August. All told, about 90 students and a dozen professors signed on for the project, with about three dozen actually providing hands-on assistance in Picayune.

“ Taking part in a relief effort of this nature was the experience of a lifetime. ”

Lauren Di Giovanni (CE '07), from Ocean City, volunteered in Picayune in September. A five-year Habitat for Humanity volunteer, Di Giovanni is no stranger to using her skills to help those in need. Assisting in Mississippi, she said, has enabled her to expand her volunteer service, form friendships, better her teamwork and communication skills and make a difference.

"Taking part in a relief effort of this nature was the experience of a lifetime," Di Giovanni said. "Just knowing the children will benefit from each project completed brings a great feeling to heart (and) . . . makes me glad I was lucky enough to be placed on the Katrina team."

College of Engineering Partners with FAA on Graduate Courses

As part of its expanding outreach, the College of Engineering is teaming with the Federal Aviation Administration's William J. Hughes Technical Center in Pomona to offer graduate-level educational opportunities for regional professionals.

This fall, the FAA Satellite Campus Pilot Program of Rowan's College of Engineering, funded with \$450,000 from the NASA Education Fund and the U.S. Department of Education, is offering courses designed to serve post-secondary education needs in the region, in particular those of FAA staff and members of the associated New Jersey Aviation Research Technology Consortium.

"I applaud Rowan University for teaming up with the FAA Technical Center and the consortium of the Center's contractors to expand opportunities for those who seek to further their education, particularly in the emerging field of engineering," said Rep. Frank A. LoBiondo, who, with Rep.

Rob Andrews and Sen. Jon Corzine, facilitated the funding.

The pilot's three initial classes include Optimization of Engineering Projects, Superpave: Exploring the Elements of Asphalt Technology, and Data Fusion. Faculty members will offer additional engineering management courses in the spring as well as classes that meet the FAA's particular interests in research and development, according to Dr. Ralph Dusseau, chair of the Civil & Environmental Engineering Program.

"The College of Engineering, as well as the Colleges of Liberal Arts & Sciences and Business, have been involved in discussions and projects with the Technical Center for a number of years. We have been actively working on the potential for offering advanced education opportunities at the site for more than two years. All perceive this as a win-win effort," noted Dr. Dianne Dorland, dean of the College of Engineering.

T. R. Chandrupatla Earns Teaching Excellence Award



Dr. Tirupathi R. Chandrupatla

Rowan presented the 2005 Lindback Distinguished Teaching Award to Dr. Tirupathi R. Chandrupatla, founding chair of Mechanical Engineering, during convocation in September.

Funded by the Christian R. and Mary F. Lindback Foundation, the \$4,000 teaching award recognizes a full-time, permanent faculty member for outstanding teaching and leadership. Chandrupatla donated the prize money to an institution for the handicapped in India for prosthetic device development. "It is recognition for all our team effort in the College of Engineering," Chandrupatla said of the Lindback, "and I feel honored to receive this award."

He joined the Rowan faculty in 1995 and has a 38-year career in industry and academia. Chandrupatla earned a bachelor's degree from Osmania University in India, a master's from the Indian Institute of Technology and a Ph.D. from the University of Texas at Austin.

An author of internationally used engineering textbooks as well as poetry in his native language of Telugu, Chandrupatla is a consultant to industry, a licensed professional engineer and a certified manufacturing engineer. He holds two U.S. patents.

Dr. John Chen, Mechanical Engineering Program chair, said, "In addition to the excellent job he did as chairperson . . . he has taken the time to mentor all of the faculty members in the department. He encourages all of us to set high goals in teaching, research and service and provides the resources necessary to achieve those goals."

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