

EngineeringNews



DEAN'S MESSAGE

Rowan University remains the only institution in the United States that requires four years of engineering clinic experience, which provides significant opportunities for students to apply their knowledge to real-world problems.

Three elements are critical to our clinics' ongoing success: industrial support, student innovation and faculty expertise. As we reach further for new partners, challenge our students with significant issues and rely on the technical strengths of our faculty, the engineering clinics continue to develop and expand.

During the past two years, we have increased the scope of the clinics nationally and internationally, addressing worldwide issues through Engineers Without Borders™ and other service-related clinics. Our goal is to emphasize the benefits of engineering and the opportunities we have throughout our careers to use our skills for the good of society. Students know that they should settle for no less in their education and contribute no less during their careers.

You will see examples of our work throughout this issue. I hope you enjoy these highlights.

Regards,
Dianne Dorland
Dean of Engineering

Chemical Engineering Team Works with Bristol-Myers Squibb on Cancer Drug

Rowan University engineering students and professors are teaming with one of the world's preeminent pharmaceutical firms – Bristol-Myers Squibb – and its research organization – the Pharmaceutical Research Institute – as the manufacturer works to develop a new drug to combat cancer.

Funded by a two-year, \$26,813 grant awarded in October by the U.S. Environmental Protection Agency (Region 2), the Chemical Engineering team is partnering with a group from the Bristol-Myers Squibb facility in New Brunswick on a project to use green engineering design in pharmaceutical development.

"We're exploring the unique characteristics in the pharmaceutical manufacturing industry that present challenges from an environmental perspective," said Dr. C. Stewart Slater, a chemical engineering professor who is one of the supervisors of the Rowan junior-senior clinic project.

The Rowan team could have based its work on existing drugs or literature about the field, but instead Bristol-Myers Squibb invited the team to follow and evaluate the drug process-

ing technique the company is developing. Rowan is researching how improvements can be made in drug development, including creating measurement tools to evaluate whether process improvements Bristol-Myers Squibb has made are effective and efficient from a green engineering standpoint.

"Bristol-Myers Squibb has a long commitment to developing manufacturing processes that are sustainable and environmentally sound," said Dr. San Kiang, director of Bristol-Myers Squibb's Chemical Process Engineering, Process Research & Development, who noted the company was a winner of the 2004 Presidential Green Chemistry Challenge Award. "This program with Rowan allows Bristol-Myers Squibb to share its expertise in green chemistry in the hope that it will have a lasting impact on these future scientists."

Professors and students, who are working at Rowan with the Bristol-Myers Squibb employees, also are looking at developing a computer-based solvent selection table that will enable the choice of more environmentally benign chemicals and help measure the overall "greenness" of the manufacturing operation.



A chemical engineering team is working in the Rowan labs to investigate membrane processes for solvent recovery as part of the EPA-sponsored green engineering project with Bristol-Myers Squibb.



Scott Barnes and Erin Frey, Rowan chemical engineering students, and Bristol-Myers Squibb scientist **Dr. Thomas LaPorte** examine a process flow diagram for opportunities for solvent recovery in pharmaceutical processing.

Engineers to Provide Solar Panels for Technology Park



Matt Alestra '04 (left) and Greg Digneo '04 own *Systems of Apollo*, which will install a photovoltaic system at the South Jersey Technology Park at Rowan University.

Greg Digneo (ECE '04) and Matt Alestra (ECE '04), both 23, have the education, ideas, drive and power – solar power, that is – to make a difference at their alma mater.

The duo, owners of Blackwood-based *Systems of Apollo*, a company that designs and installs solar electric systems, recently signed a contract to install the solar panels for a photovoltaic system on the first building at the South Jersey Technology Park at Rowan University. The contact marks the first high-profile commercial deal for the business that Digneo thanks Rowan for helping him start.

Digneo, of Blackwood, and Alestra, of Thorofare, were close friends in college, and the idea to start a business seemed natural to them. They worked with electrical and computer engineering professor Dr. Peter Jansson on the technical end and Dr. Mark Weaver, the professorial chair in entrepreneurship in Rowan's Rohrer College of Business, on the business side.

Digneo speaks highly of both professors. "Jansson is the energy guy at Rowan, he was the first one I spoke to," he said. "Dr. Weaver's my mentor."

Groundbreaking is scheduled for this spring on the first phase of the Technology Park. Ultimately, *Systems of Apollo* will install solar panels that cover five percent of the energy costs of the new facility, making it Leadership in Energy and Environmental Design (LEED) certified.

Digneo, who conceded that starting a business is difficult work, is especially pleased to be involved on a Rowan project. "There are few people," he said, "who can point to something tangible at Rowan and say, 'We did that! It's our mark.'"

Alumni Put Engineering Skills to Work at NJDOT

Whether inspecting a bridge, rating roadways for funding or planning a sidewalk, Rowan alumni put their engineering skills to work every day in positions at the N.J. Department of Transportation (NJDOT).

Gina Rossi (CE '05), an NJDOT civil engineering trainee who lives and works in Trenton, credits Rowan with developing her skills. "Learning how to create proposals was extremely helpful considering I now study and review them. And, the hands-on clinics taught me how to work in teams, as I currently do, and how to deal with real problems," she said.

Rowan made a difference for Kyle Skala (CE '05), who learned a great deal through the transportation classes taught by Dr. Yusuf Mehta, assistant professor of civil and environmental engineering. "Now when I look at a set of plans I see what was being taught," said Skala, a civil engineering trainee for local aid and economic development, Cherry Hill District 4 NJDOT.

The overall knowledge of an engineering graduate is used daily, noted Bill Henderson (CE '05), who lives in Brick and is a civil engineering trainee for local aid and economic development at the NJDOT District III central office in Freehold. There, he is involved in overseeing area projects from start to finish, such as roadways, bridges, sidewalks, bikeways and parks.

The Rowan graduates working at NJDOT are a great addition to the department, said Doreen Plummer, manager of recruitment and placement, NJDOT Division of Human Resources. "We are impressed by a multitude of characteristics: their professionalism, their knowledge of civil engineering but most of all their participation in engineering clinics. We believe this gives students some practical engineering knowledge that can only help them once they are employed," she said.



*A number of Rowan civil engineering graduates have found rewarding positions at the N.J. Department of Transportation, including, from left, front row, **Gina Rossi, Andrew Zeleznock, Ryan Reali, and KellyAnn Winn;** and back row, **Bill Henderson, Frank McCombs, and Kyle Skala.***



From left, Tau Beta Pi Councillor **Dennis Tynner**, **Gregory D. Webster '06**, **Dr. Dianne Dorland**, dean, and **Dr. Steven Chin**, associate dean, celebrate the installation of a Rowan chapter of the national engineering honor society.

College Installs Tau Beta Pi Engineering Honor Society

Rowan's College of Engineering marked an important milestone when the New Jersey Epsilon chapter of Tau Beta Pi was installed on campus in January.

"Establishing a Tau Beta Pi chapter at Rowan is very important to us as it is the only honor society that includes all engineering disciplines. Members are known for distinguished scholarship and exemplary character, and we're proud to have this leadership within the College," said Dr. Dianne Dorland, dean of the College and also a member of Tau Beta Pi.

Founded in 1885, Tau Beta Pi recognizes juniors and seniors who are ranked at the top of their class. Greg Webster, a senior mechanical engineering student from Estell Manor, led the student effort this year to establish the chapter. The selection process is stringent and includes reference checks of eligible candidates; in addition, all those inducted must commit to a service project.

Webster explained that as president of the College's existing honor society preparing for the installation, he built on the work of previous officers and at the same time learned a lot about leading a chapter. "Having a Tau Beta Pi chapter further establishes Rowan University as a first-rate engineering school. The application process was rigorous, and not all schools that apply for charters are granted them," Webster said.

As part of their service project this semester, the chapter coordinated activities for National Engineers Week in February, the purpose of which is to celebrate the engineering profession and recognize the positive accomplishments of all engineers.

Having a Tau Beta Pi chapter on campus provides scholarship and networking opportunities for its students. "Overall, Tau Beta Pi promotes excellence in engineering education in our students who, in turn, are great role models," said Dr. Steven Chin, associate dean of the College.

Edison Venture Fund Supports Initiative

The Edison Venture Fund recently awarded a \$326,000 grant to the Rowan University Foundation for a collaborative College of Engineering/College of Education project to promote engineering education among middle school teachers.

The three-year grant will support "Engineering Clinics for Teachers: The Rowan ECT Program," designed to help teachers include engineering in their classes.

Through hands-on engineering activities, curriculum assessment and site visits, ECT will make engineering more relevant to educators, provide exposure to engineering careers and support teachers and students in exploring and understanding engineering content in K-12 education. ECT is based on Rowan's innovative engineering clinic model, offering multidisciplinary groups opportunities to solve real-world problems.

Dr. Kauser Jahan, an associate professor of civil and environmental engineering, is ECT director, and Dr. Kathy Sernak, an associate professor of educational leadership, is assistant director. Rowan's Education Institute will assist them in the organization and implementation of the program.

One of the most important ways to further the United States' standing in technology is to strengthen how math and science are taught, according to Jahan and Sernak.

"Rowan's ECT program will attract hundreds of teachers who will influence thousands of students to consider engineering as a career field," noted John Martinson, Edison managing partner.

Headquartered in Lawrenceville, Edison Venture Fund forges partnerships with entrepreneurs, service providers and other financing sources to support building successful companies.



Burlington County-based business Inductotherm recently presented \$7,050 to help fund the Mini-Baja® project at Rowan University's College of Engineering. Pictured (left to right) are: **Dr. Eric Constans**, associate professor of mechanical engineering; **Dr. Krishan Bhatia**, assistant professor of mechanical engineering; **Dave McKenna**, Browns Mills, mechanical engineering student; **Dr. Oleg Fishman**, Inductotherm Group vice president; **Dr. Dianne Dorland**, dean of the College of Engineering; and **Georgia Smith**, Inductotherm personnel administrator.

Dr. Peter Mark Jansson Energizes Electrical & Computer Engineering



Dr. Peter Mark Jansson

The Philadelphia Region of the Association of Energy Engineers recently presented electrical and computer engineering professor Dr. Peter Mark Jansson its Regional Award for Professional Development for outstanding accomplishments in the development of energy engineers and for superior service to the energy engineering profession.

The award represents only a small part of Jansson's career at Rowan and dedication to the community. After 19 years of working for Atlantic City Electric Co., Jansson brought his skills into the classroom five years ago, taking pride in shaping the minds of young engineers.

"I enjoy the interaction with students on a daily basis," said Jansson, who has served as vice president of the New Jersey Higher Education Partnership for Sustainability. "It's so rewarding to watch a student master the material and to be part of another person's education."

Jansson teaches his students to consider the whole picture in engineering problem solving. Engineers must first identify the correct problems to solve and take an analytical approach to understanding the problem as a holistic system. "You have to be sure you are solving the right problem first," he said.

For Jansson, his success in the engineering profession came with following his passion, which remains his advice for students today. Jansson sees his duty as an educator to energize his students and inspire them to "put their heart, soul and skills in it."

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Rowan engineering alumni, such as Lea Volturo CE '04, are on the road with NJDOT. **See story on p. 2.**

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