



DEAN'S MESSAGE

This year marks the 20th anniversary of the \$100 million gift by Henry and Betty Rowan to then-Glassboro State College. Henry Rowan had one request — that an engineering college be built that would stimulate economic development and produce engineers ready to meet tomorrow's grand challenges.

Twenty years later, his vision has become reality, as evidenced by the accounts in this newsletter. The accomplishments of the College of Engineering have been remarkable, and the best is yet to come.

This will be my last semester serving as interim dean, which has been my distinct pleasure. I will return to my previous role as associate dean in January.

In moving forward, Dr. Anthony Lowman will provide leadership as the new dean of the College of Engineering. He holds a Ph.D. in chemical engineering from Purdue University and served most recently as the vice provost for research and business development and professor of biomedical engineering at Temple University.

Please join me in welcoming Dr. Lowman to the Rowan University College of Engineering as we continue to advance our groundbreaking program.

Steven Chin, Ph.D., P.E.
Interim Dean

Engineering a hub for K-12 education

K-12 students throughout South Jersey benefit from some outstanding Rowan University technical minds thanks to a new program initiated by Dr. Kauser Jahan, professor of civil and environmental engineering, and funded with a \$300,000 grant from Lawrenceville-based Edison Ventures.

This fall, Jahan kicked off her latest outreach program: a Virtual Hub for Promoting Engineering (or VHUB). VHUB is designed to introduce younger students to engineering and technology concepts in their classrooms and in their homes and to hopefully lead them to consider further education — and possibly careers — in those fields.

"VHUB will reach students at all levels and give them a sense of whether engineering is a career path they'd like to follow," said John Martinson Jr., investment manager, Edison Ventures. "Kauser and her team are really cutting edge, pushing engineering into the curriculum and infusing hands-on activities that make engineering come alive to the students."

A virtual site providing resources for materials using technological products, VHUB

will include worksheets, video clips, activities, lab experiments and apps addressing the New Jersey Core Curriculum Content Standards for Science at all threshold levels.

"Currently there are very few workshops that train teachers on using contemporary technology and multimedia as resources for enhancing and promoting science and engineering education in the South Jersey area," said Jahan.

The College of Engineering offers numerous K-12 outreach programs, several created by Jahan, including ECT (Engineering Clinics for Teachers) and Engineers on Wheels. Edison Ventures funded both of those initiatives, which enable middle and high school teachers to work with University faculty on engineering design projects and to develop the teaching methodologies to transfer engineering ideas into their classrooms and to bring hands-on experiments directly to K-12 classrooms, respectively.

VHUB will focus primarily on energy, materials and sustainability and will include work with computers, iPhones and iPads, among other technology tools.

John Martinson Jr. demonstrates the properties of a slimy substance to student Colleen Nauss (left) and Glassboro Intermediate School science teacher Denise Barr.



ECE professor lands prestigious NSF Type 2 TUES grant

For Dr. Ravi Ramachandran, earning Rowan's first Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES) Type 2 grant from the National Science Foundation was a coup — the organization awards only about 25 such grants a year. How the Electrical and Computer Engineering professor is using Rowan's \$356,654 share of the funding is even more important.

Ramachandran is project director of a collaboration with Bucknell University and Tennessee State University that received about \$600,000 in TUES funding through 2015. The project — Vertical Integration of Concepts and Laboratory Experiences in Biometrics Across the Four-Year Electrical

and Computer Engineering Curriculum — focuses on laboratory exercises in biometrics that start as well-structured experiments at lower levels and proceed to increasingly complex design projects at upper levels of the curriculum.

Working with Ramachandran at Rowan are Drs. Steven Chin, interim dean; Kevin Dahm, Chemical Engineering; and Robi Polikar and Gina Tang, Electrical and Computer Engineering. The team will create a national model for a multi-year, interconnected curriculum for the instruction of biometrics — the science of recognizing and authenticating people using their physiological features, including face, speech, iris, signature and fingerprint recognition. Biometrics is crucial in cybersecurity and other



Dr. Ravi P. Ramachandran received the University's first Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics Type 2 grant from the National Science Foundation.

commercial, government and law enforcement applications.

The concept of vertical integration is well established at Rowan. This project allows Rowan to transfer to and evaluate vertical integration and other important curricular concepts with the partnering institutions, which also include Gloucester County College. High school and middle school modules will run in Washing-

ton Township and Pitman in Gloucester County, N.J.

"Our project will provide student participants with a progressively more complex introduction to biometrics, which really is a burgeoning field with a rapidly growing global market," Ramachandran said. "Ultimately, we hope to make the curriculum available to more schools in and out of our regions."

Civil engineering professor preserves ecosystems

When Superstorm Sandy unleashed its fury in late October, the devastating aftermath highlighted the region's vulnerability to increasingly volatile climate changes.

Dr. Joseph Daraio joined the Civil and Environmental Engineering faculty in September, bringing expertise in water resources research.

Although he arrived on campus only this fall, Dr. Joseph Daraio, assistant professor of civil and environmental engineering, already is keenly interested in such water resources engineering

issues in the state. He hopes to eventually work with a Rowan team to help protect the Jersey Shore from hurricane storm surge.

Earning degrees in biology and environmental engineering, Daraio embraced the importance of water resources research early in his career, when he was hired as a hydraulic engineer with the U.S. Bureau of Reclamation in Denver for river restoration projects.

"It combined my interests in biology and engineering through application to environmental conservation projects, doing them in a way that takes into consideration that humans are a major part of ecosystems," he said.

Healthy ecosystems are central to healthy populations, he explained. "We need to

understand natural processes and work with nature instead of against it," he said. "This is important so that we can build and have a sustainable water infrastructure that includes healthy rivers as well. I don't distinguish between a healthy ecosystem and a healthy community of people. To me it's one and the same."

He looks forward to pursuing this research at Rowan and working with his students on these projects.

Data from his postdoctoral research at North Carolina State University on river flow piqued his students' interest this semester. "If students can see how what they are learning has an impact and how it's important, I think it really gets them motivated," he said.



Alumni pave a pathway for new graduates

Scarcely more than a decade after the College of Engineering graduated its first class, Rowan engineers enter the job market each May with a first-rate reputation that precedes them.

In an economy still struggling to recover, the College was successful in placing 90 percent of the class of 2012. A number of employers, such as DuPont, Deere & Co., Greenman-Pedersen Inc., Lockheed Martin Corp., Pepco Holdings Inc. and PSEG, hired two or more of these grads.

“The program is designed to give you a very solid foundation in engineering principles, which you can apply to day-to-day work and the engineering performed at DuPont,” said William Wilkins, '12, a field engineer-chemical engineering consultant with DuPont Engineering Research and Technology in Wilmington, Del. He explained that the time management and technical mindset he developed at Rowan have been invaluable on the job.

Rowan grads' practical experience is a major draw. After completing an internship for DuPont's Chambers Works facility in Deepwater, N.J., Dana Demiduke, '12, was hired as an occupational health specialist at DuPont's site in Parlin, N.J. “Research I performed with one of my professors during the summer gave me the engineering experience that helped me land my internship,” she said.

Early Rowan Engineering grads continue to pave the way for their younger counterparts by setting a good example and helping with all-important connections. “Rowan's small-family mentality generates a network, with people pulling for each other and passing along resumes,” said Wilkins, who explained that he secured his internship with DuPont with help from employee and engineering alumna Jamie Ginn, '04. He also has recruited recent graduates for his new employer.

“You want to go back and try to help someone else,” he said.

Industry partners strengthen program's potential



Thomas Xenakis' (left) and Robert Braun's firms support Rowan Engineering.

This summer, PSEG's Women in Nuclear chapter joined with the College of Engineering for its AWE (Attracting Women Into Engineering) workshop. By supporting outreach programs like AWE, sponsoring clinics and hiring Rowan's engineering students, industry remains an integral partner in Rowan's engineering program.

Robert Braun, senior vice president and chief operating officer of PSEG Nuclear in Hancocks Bridge, N.J., is enthusiastic about his company's role in such collaborations. “We want to be one of the go-to industry partners — a company Rowan can reach out to for advice on curriculum and a company it can count on to help place its students,” said Braun, who serves on the Dean's Advisory Council for the College and the Rowan University Foundation Board of Directors.

PSEG is a leading employer of Rowan Engineering graduates and has sponsored an engineering

clinic and the College's RISE (Rowan's Introduction for Students to Engineering) and ECT (Engineering Clinics for Teachers) programs.

The program's four-year, clinic-based approach makes Rowan graduates particularly attractive to employers, said Thomas Xenakis, '00, vice president of the commercial division of Concord Engineering in Voorhees, N.J., another of the College's partners. Concord has hired interns and employees and is exploring the possibility of sponsoring an engineering clinic.

“The multidisciplinary teamwork, the collaboration and the technical communication in the College of Engineering are key,” he said.

Since graduating in the College's inaugural class, Xenakis has remained connected to his alma mater and currently serves on the Dean's Advisory Council. “This is another way we are providing industry insight and feedback to help guide the program based on the needs we see in industry,” he said.



William Wilkins and Dana Demiduke, employees of DuPont and Rowan Engineering alumni, visit the Hagley Museum and Library's machine shop. Hagley is the birthplace of DuPont.



In October, **Dr. Brent J. Bos**, senior research physicist at NASA, presented "Engineering the Future: Pioneering Flight Missions at NASA's Goddard Space Flight Center" as part of the Henry M. Rowan Speaker Series.

Rutgers honors Dr. C. Stewart Slater

Rutgers University recently awarded Dr. C. Stewart Slater, chemical engineering professor, its 2012 Medal of Excellence for Alumni Achievement in Academia.

Among his achievements, Slater considers his role as founding chair of the College's Chemical Engineering program most rewarding. He was part of a team that built a cutting-edge engineering school from scratch. "It was a blank slate, without a building, faculty or students," said Slater, who earned his bachelor's, master's and doctoral degrees from Rutgers, New Brunswick, N.J.

Slater's research and teaching interests are in separation and purification technology; green engineering and sustainable design; and investigating novel processes for interdisciplinary fields such as pharmaceutical engineering, biotechnology and green engineering. He has authored more than 100 papers and several book chapters, held national office in several divisions of the American Society for Engineering Education and received many honors and awards.



Dr. C. Stewart Slater (left) with Rutgers' Dr. Thomas Farris, engineering dean.

Slater is a strong proponent of hands-on, project-based work, the hallmark of the Rowan Engineering program. "You want students to use information not only for the lab experiment that they're doing today, but you want them to be able to apply it to real-world cases years after they graduate," he said.

Most of all, he hopes his students use their education to serve a larger purpose, harnessing the potential of engineering to advance society. "When you look at it, what do engineers do?" he asked. "They use the resources that we have available to improve the quality of life."

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