

Engineering

NEWS



DEAN'S MESSAGE

The College of Engineering surpassed the “millennium mark” this May, having graduated more than 1,000 students since opening its doors to the first freshman class in 1996.

As we commemorate this milestone, the College’s future is even more promising. In September we welcomed more than 200 freshmen, who boast the most impressive credentials to date. Even during the past few years, which have included economic downturns, the placement rate for our graduates has averaged between 90 and 95 percent, demonstrating the value of a Rowan Engineering degree. Research at the College of Engineering continues to expand. Collaborations with the U.S. Economic Development Administration and multiple grants we have attained from the National Science Foundation are making a national impact on community planning and engineering education. Moreover, the opening of the Cooper Medical School of Rowan University next year will add collaborative strength in numerous areas.

As our motto states, “Innovation Starts Here.” Please contact us so we can explore innovative opportunities together!

Dr. Steven Chin
Interim Dean

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College welcomes largest freshman class

This fall, the Rowan University College of Engineering welcomed its largest freshman class ever, continuing to attract the best and the brightest students.

This class of more than 200 students boasted an average SAT score (critical reading plus math) of 1268, with mechanical engineering majors attaining an average SAT score of 1309, the highest for all majors in the University. On average, students were within the top 10 percent of their high school graduating class, with an average GPA of 3.85.

Seeking a total of 160 students for this year’s freshman class, the College received deposits from 220 students. “We actually exceeded our target by quite a large margin and have done so for the last couple of years,” said Dr. Steven Chin, interim dean.

Students choose the College for a number of reasons. Sheffield Kaelin, ’15, an electrical and computer engineering major from Malaga, discovered its benefits as he observed his brother Cliff, ’12 (also an elec-

trical and computer engineering major), progress through the program. “I saw some of the projects that the IEEE members did, like the Micromouse Competition, and I also liked the Cave Automatic Virtual Environment (CAVE™) at the Tech Park. I thought those were pretty neat,” he said.

He also was drawn by the availability of internships and personal interaction in classes. “I really liked the smaller class sizes and how they provide more attention to the individual,” he said.

During campus visits, prospective students also praise the program’s hands-on focus. “They see that the students are involved in project work within the program, and they have a chance to talk to the students,” Chin said.

These features are a winning combination for many. “They get a feel for our project-oriented education, small class sizes and multidisciplinary focus,” Chin said. “All of those contribute to why students are attracted to our program.”

Dr. James Newell, interim provost (left), speaks with Rowan Engineering freshmen **Janine Norbut**, a civil and environmental engineering major, and **Joseph DiGiacomo**, a chemical engineering major, at the Thomas N. Bantivoglio Honors Concentration freshman reception in October.



With support from the EDA, Rowan Engineering virtually drying out South Jersey

A little bit of water in South Jersey goes a long way. But thanks to a \$424,962 grant from the U.S. Economic Development Administration and \$50,000 from AT&T Inc., researchers in the College of Engineering may be able to help local towns stem flooded roads and dry up damp basements.

COE members are using the funding to expand their use of virtual reality to explore the effects and mitigation of natural disasters in urban settings as part of their project titled "Application of a 3-D Virtual Reality Tool for Community Planning and Economic Development: Simulating Flooding and Remediation in Southern New Jersey Communities."

Dr. Shreekanth Mandayam, the associate provost for research;

Dr. Yusuf Mehta, an associate professor in the Civil & Environmental Engineering program; and George Lecakes, a research associate, are overseeing the project.

Teams are using Rowan's state-of-the-art Cave Automatic Virtual Environment, known as a CAVE™, to model flooding and remediation. The CAVE™, housed at the South Jersey Technology Park in Mantua Township, is a 100-cubic-foot, fully immersive, navigable and interactive virtual reality system in which teams also have conducted research for the United States Navy and NASA.

With the latest grants, the researchers have expanded their initial work done in the City of Camden, conducted in conjunction with the Cooper's



George Lecakes, '09, M'11, a research associate at Rowan University, operates the CAVE™ system, which is being used to simulate Von Neida Park at Camden, where students use advanced visualization techniques to determine areas prone to flooding during major storm events.

Ferry Development Association and Cramer Hill Community Development Corporation, and have included Vineland.

According to the professors, infrastructure concerns in both cities and elsewhere in South Jersey contribute to flooding, and that flooding often is an impediment to redevelopment and economic growth.

"Virtual reality is a technology that allows us to rapidly address chronic infrastructure problems in the nation's urban areas. The CAVE™ environment can profoundly transform how engineers, city planners, residents and the government can come together to solve problems that impact all of us," said Mandayam.

Partnership drives College of Engineering to new heights

As construction crews lifted the final girder into place for the state-of-the-art Cooper Medical School of Rowan University (CMSRU) in May, Rowan University College of Engineering faculty already were building strong academic connections with CMSRU.

During a topping-off ceremony in May, the final girder for the Cooper Medical School of Rowan University building was placed.

Preparing to accept its first class in 2012, CMSRU appointed six College of Engineering professors to its faculty. Representing each engineering program at the College — Chemical, Civil & Environmental, Electrical & Computer, and Mechanical Engineering — the professors

hold joint faculty appointments with both schools.

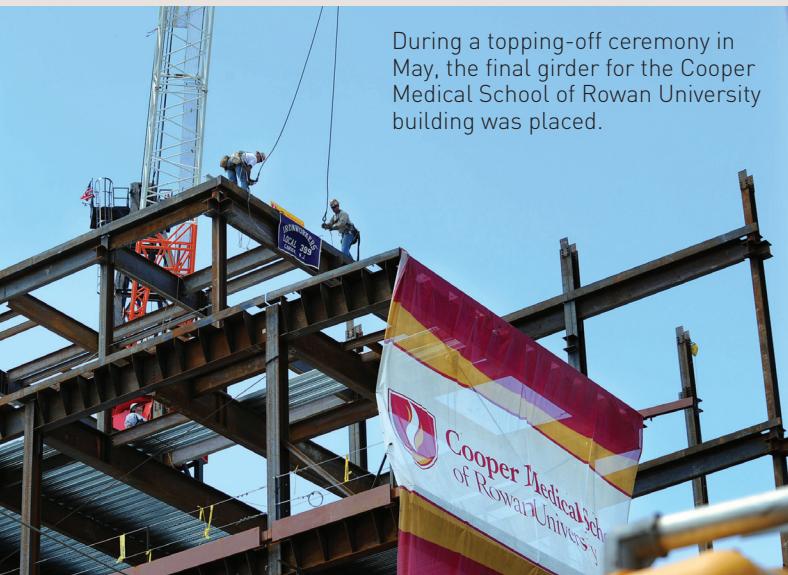
This partnership will drive widespread research advances in the University. "There's so much collaboration that is possible," said Dr. Steven Chin, interim dean of the College of Engineering. Potential areas include biomedical engineering, bioremediation, systems engineering, computational intelligence, bioinformatics and diagnostic data mining.

"Leveraging the great strength of Rowan's College of Engineering will provide greater breadth and depth to CMSRU's new educational and research programs beyond our dedicated biomedical science and clinical faculty. We can hit the ground running," said Paul Katz, M.D., founding dean, CMSRU.

Dr. Mary Stachle, assistant

professor of chemical engineering, who is researching neuroregeneration, looks forward to the partnership. "I believe it brings a new class of problems that engineers can tackle," she said. "A number of us are already doing research in biomedically relevant areas, and this just brings an opportunity to have new collaborations and to apply our skill sets toward different problems that are biomedically relevant."

"We're taking multidisciplinary education — the hallmark of the Rowan College of Engineering — to the next level," Chin said. "We will have opportunities we didn't have before because we now have clinicians available to us to work on complex problems involving health care and health care delivery as well as biomedical engineering."



K-12 programs reach the next generation of engineers

As teams of high school students painstakingly assembled robots using LEGO® MINDSTORMS® pieces during the RISE (Rowan's Introduction for Students to Engineering) program this summer, they were doing much more than playing with toys.

"Coming to a place like Rowan and being able to do hands-on projects gives students a great deal of exposure to the different kinds of engineering," said Dr. Eric Constans, Mechanical Engineering chair.

Such projects are a key feature of Rowan University College of Engineering outreach programs, which are designed to interest K-12 students in pursuing engineering careers.

The College's outreach efforts began in 1999 with AWE (Attracting Women to Engineering), a program designed for middle-school girls that evolved from a two-day to a

three-day offering. "We are at capacity, so that's a good thing," said Melanie Basantis, outreach director. "It proves that girls are embracing their math and science courses and are willing to explore engineering."

"RISE evolved from AWE, and we're again at capacity," Basantis said. "There's definitely a need out there for these types of programs, and the students are interested. It's a fun, interactive look at engineering."

As increasing numbers of students with special needs enter college, the University launched the Young Profs camp this summer for middle school students with these conditions.

"We wanted to reach these individuals when they were between 11 and 14, when the talk of transition to high school was just beginning," said John Woodruff, director of the Academic Success Center and Disability Resources.

Campers learned about a



Students launch a bottle rocket during the Young Profs program, as **Sarah Bauer**, '13, civil and environmental engineering major, and **Andrea McFarland**, '14, also a civil and environmental engineering major, observe.

range of disciplines throughout the University. At the College of Engineering, they concocted slime, created bottle rockets and constructed bridges. "It was a chance to expose campers to different college majors and be involved with really neat,

fun activities," Woodruff said.

Students responded enthusiastically to the new program. "It was an opportunity for them to explore different options, and they enjoyed interacting with the faculty and other campers as well," Woodruff said.

College rises to the top

BEST COLLEGES
U.S. News & WORLD REPORT
REGIONAL UNIVERSITIES
PUBLIC
2012

Rowan tied for 16th place among colleges and universities whose engineering programs offer a bachelor's or master's degree as their highest degree

It's no secret that the Rowan University College of Engineering is highly respected throughout the nation for its hands-on, minds-on approach to engineering, and *U.S. News & World Report* rankings continue to reaffirm its national prominence.

According to rankings reported in the *Best Colleges* 2012 edition this summer, the College tied for 16th place among all colleges and universities whose engineering programs offer a bachelor's or master's degree as their highest degree. Rowan Engineering ranked seventh in the nation in that category among public schools.

The engineering rankings, based on a peer survey of deans and senior faculty, reflect the quality of the program, said Dr. Steven Chin, interim dean.

"It's a program that delivers educationally to meet today's needs. It's relevant. It's timely. And our engineering education is delivered in a very high-quality manner."

Individual programs continued to distinguish themselves in the rankings. The Chemical Engineering program once again tied for third place and was the top public school program in the country. The Mechanical Engineering program took eighth place.

A variety of factors contribute to the success of these programs. For example, the Chemical Engineering program is highly visible, with faculty presenting research and teaching methods at American Society for Engineering Education meetings, explained Dr. Robert Hesketh, professor and chair of

Chemical Engineering

In addition, regardless of discipline, engineering students tackle hands-on projects from freshman through senior year. In the last two years of engineering clinic, multidisciplinary teams of juniors and seniors advance to solving real-world problems for industry. "What industry loves about this is that they've had a student who has solved similar problems during the last two years of clinic," Hesketh said. "When they start work within that industry, they know what to do."

"These individual honors are noteworthy and no doubt are a reflection of our multi-disciplinary approach to engineering education that includes contributions from all programs in the college," Chin said.



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On the road again . . . Once again, Engineers on Wheels has hit the road — with a brand new van joining the program. Now two vibrantly colored vans are packed with activities designed to bring the adventure of engineering to K-12 students in the region. The original van was funded by Edison Venture Fund and John Martinson, its managing partner, and the new van was supported by the original sponsors and Lockheed Martin Corp.

Professor sparks the interest of future engineers in South Jersey

Using a bagful of common household objects, Dr. Linda Head, associate dean, conjures up projects that may influence the career paths of sixth- through eighth-graders at St. Michael the Archangel Regional School in Clayton.

Head began teaching a 45-minute engineering class at the school last fall in response to a request from Janice Bruni, principal. Members of the student chapter of the Society of Women Engineers (SWE) came along to assist. "That's very intriguing to the middle school kids, to see college kids come out and have fun with them on a project," said Head, a co-advisor of SWE.

During these classes, Head engages students in interactive tasks geared to spark their interest in engineering. "Since there is a short amount of time, my main goal is to help them learn a little bit and enjoy a lot," she said.

Using items like kitchen strainers,

rocks, cloth and cotton, small teams of students spent one class determining the best methods to build a water filter to clean muddy water. "They had a great time coming up with a variety of different combinations to get the cleanest water," Head said.

The timing of the class couldn't be better. "This is the exact age when most of the studies say students begin making decisions about what they're going to end up doing in high school, whether they're excited about science and engineering or if they're going to go in some other direction," Head said.

Students have responded enthusiastically, with the numbers growing from a handful last year to a class size of 20 this year.

Head enjoys interacting with the students and helping to build enthusiasm. "They can wonder what will go on next week, and they know someone from the University is coming to help them learn. I think that's very valuable."

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