# Table of Contents

3  Message From the Dean  
5  Laying the Foundation  
6  Supporting Engineers on the Path to Success  
8  Forging New Pathways  
10  Shoring up the Future of the New Jersey Coastline  
12  Advancing Research to Commercialization  
14  Testing the Waters in Engineering  
16  Developing Educational Innovations Through Research  
18  Formulating New Remedies for Back Pain  
21  Breaking Ground for the Future  
22  In Gratitude
The Rowan University College of Engineering has been breaking ground in engineering education since its inception in 1996. Today our journey down the path of growth and change continues.

Guiding us is an unwavering commitment to create a world-class engineering college, one that provides the gateway to boundless opportunities for students at all levels. This focus drives the significant steps we are taking to fulfill our vision. The transformation of Rowan Engineering is well underway. It’s evidenced in the contributions of our faculty, students and alumni who elevate everything we do through their inspired teaching, innovative research, industry engagement and dedicated practice of engineering. Many of their stories proudly fill the pages of this report.

Just as it was nearly two decades ago, the bar for engineering education also is being raised by the generous contributions of Henry M. Rowan and his family. Thanks to the family’s most recent gift, we are able to establish the College’s first doctoral program. Similar to the first class of engineering undergraduates in 1996, inaugural students in the Henry Rowan Engineering Ph.D. Fellowship Program will receive full stipend and tuition support.

The generosity of the Rowan family also has led to the creation of a Globalization Fellowship Program for Undergraduates. This new initiative will provide opportunities for select undergraduate engineering students to step out of our classrooms and off the continent to study at universities and complete industrial internships at corporate sites around the world. With the job market growing ever more competitive, students can leverage the program to enhance their global perspectives and extend their technical skills.

To reach new heights in engineering education, we must also continue to create opportunities where bright minds can explore the dynamic disciplines that address societal needs. Responding to the growing need for improved health care delivery and patient care, Rowan will educate and train a new generation of biomedical engineers starting in fall 2014. They will pursue a real-world curriculum that bridges the medical and engineering fields and fosters innovative thinking in the development of novel health care solutions.

The College of Engineering is breaking ground literally, too, constructing a new $76 million facility adjacent to our existing building. Scheduled to open in 2016, the new building will enable the College to double its enrollment, bringing even more exceptionally talented engineering students to campus, and to double the size of our faculty as well.

As our transition from a strong regional undergraduate engineering school to an internationally recognized college firmly takes shape, I believe our accomplishments point to something special. Rowan is evolving as the destination where tomorrow’s engineering leaders can discover, learn and grow. Our future holds the promise of continued excellence.

Dr. Anthony Lowman
Dean
Henry Rowan views the 7-foot bronze likeness of himself that was unveiled during a ceremony in December 2012 commemorating the 20-year anniversary of his historic $100 million gift to then-Glassboro State College.
During the summer of 1992, New Jersey industrialist Henry Rowan and his late wife, Betty, made an extraordinary pledge of $100 million to then-Glassboro State College.

In return for this gift, the College was charged with the task of building an innovative engineering school that would prepare talented engineers equipped to meet the challenges of the future and committed to making the world a better place. The school also would be the catalyst for economic growth in the region.

Dr. James Tracey, founding dean of the College of Engineering, led the team who created the engineering program. Tracey previously served as dean of sciences and engineering and director of the Institute for Research in Science and Engineering at the University of Texas in San Antonio and had been a faculty member at five other institutions in the United States and abroad.

The founding dean, department chairs and other faculty charted the future of the Rowan University College of Engineering. The College would deliver a unique hands-on approach to engineering education, featuring its hallmark interdisciplinary engineering clinics.

More than 20 years later, Rowan University and the College of Engineering have witnessed an unprecedented transformation. Not only did the Rowans’ generosity give birth to a groundbreaking engineering school, but it also established new standards for donors who continue to enrich the University and support higher education throughout the country.

The Rowan University College of Engineering continues to capture national attention, and the Rowans’ visionary gift continues to revolutionize the University and the region.
Catherine Ni ’00, who is engaged in long-term strategic planning at Lockheed Martin, also is committed to the future of Rowan engineering students.
Although her job demands she have a sharp eye on the future, Catherine Ni keeps her past strongly in view. Thirteen years into her tenure at Lockheed Martin, she spearheads the strategic planning, investment decisions and technology assessments that support the growth of this $8 billion provider of defense systems, sensors and services, as well as innovative solutions for global security. To help her succeed in this mission-critical role, Ni draws upon the background and skills she developed at Rowan University.

“Although I earned my degree in mechanical engineering, today I’m translating technology into business strategies, planning for the long-term future of Lockheed Martin,” Ni notes. “Through its engineering clinic projects and program, the College of Engineering laid the foundation for my career, helping me develop excellent technical skills and showing me how to execute a project by bringing together diverse engineering disciplines and resources.”

“We need to show students that engineering and technology provide limitless opportunities and career paths.”

Ni started on her path after graduation, when Lockheed Martin placed her in a two-year leadership development program in Moorestown, N.J. Since then, she has taken on many assignments across the company leading to her current strategic planning role. Although her success has brought her to Lockheed Martin Missiles and Fire Control in Florida, her ties to Rowan are as strong as ever. She remains connected to the College of Engineering, serving on the Dean’s Advisory Council. During the 2011-12 academic year, Ni and her husband also began funding an annual scholarship for Rowan’s engineering students.

“As a recipient of one of the College’s PRIDE (Partners With Rowan in Developing Engineers) 2000 scholarships, which were provided to each member of the College’s inaugural class, it’s my responsibility to give back to the institution that contributed to my success today. We need to show students that engineering and technology provide limitless opportunities and career paths,” she adds.
Forging New Pathways
Spend a few minutes with Gina Tierno and it will be easy to understand why she is a natural leader. Energetic and driven, she is making the most of her time at Rowan, exploring a wealth of opportunities to learn and grow.

Arriving on campus as a freshman, Tierno wasted little time pursuing her interest in naval engineering and her desire to lead. She quickly began working with faculty and fellow classmates to establish Rowan’s chapter of the American Society of Naval Engineering. For the last three summers, she worked as a chemical engineering intern with the U.S. Navy. After the first year, Navy employees asked if she wanted to start the Society’s Rowan chapter, which was chartered last fall.

“Engineering students often hear about industry careers, but not a lot about opportunities with the government,” says Tierno. “There are so many benefits they may not know about, and through this organization I want to help spread the word. I think a lot of students are interested in helping our country and making a difference.”

Rowan has proven to be the perfect place for Tierno, offering her numerous other opportunities to step forward and lead. Through the Freshman Leadership Involvement Program, she serves as a certified leader and leadership mentor. In addition, she is the College’s special projects coordinator, helping to establish new campus programs, and she has been an academic senator representing the College in the Student Government Association. In between, she has found time to become a member of the Society of Women Engineers, the American Institute of Chemical Engineers and Engineers Without Borders.

“Rowan University has given me a great outlet to express myself in leadership roles. I love to lead and start new things, so I chose a school where I would have these opportunities,” she says.
Shoring up the Future of the New Jersey Coastline
Although she was relieved when Superstorm Sandy left the Glassboro area with little damage in October 2012, Dr. Beena Sukumaran knew she could lend a hand to those affected elsewhere. Watching television images of widespread destruction throughout the state’s coastal communities, Sukumaran realized that the most meaningful way she could make a difference was by using her engineering knowledge and volunteering her time and skills.

“In engineering there is a huge emphasis on social responsibility, which is a critical lesson to pass on to the next generation of engineers.”

Sukumaran’s outreach efforts brought her first to Atlantic City. There she met with an assessment committee as a member of Geo-technical Extreme Events Reconnaissance, which is supported by the National Science Foundation. Starting in Atlantic City and the neighboring town of Brigantine, Sukumaran and fellow committee members assessed and documented structural damage to buildings and infrastructure. She also contacted several of her students about assisting with damage assessment efforts, and they were eager to get involved. In spite of access and travel limitations heading northward, the group gradually made its way up the state to document damage on Long Beach Island and in Seaside Heights and other Shore communities.

The project continued in spring engineering clinics, where the focus moved to quantifying coastal erosion using geographic information systems images before and after the storm, as well as examining design strategies that could minimize damage in the future.

Sukumaran believes that the volunteer efforts helped provide a valuable and enduring learning experience for her students. “In engineering there is a huge emphasis on social responsibility, which is a critical lesson to pass on to the next generation of engineers. As educators, we must teach future engineers about the importance of designing safe structures and using design strategies to mitigate the damage from more frequent and destructive storms,” she says.
Advancing Research to Commercialization

Dr. Thomas Merrill continues to study how a new technology could help cool tissue and restore blood flow during emergency angioplasty and intracranial thrombectomy procedures and potentially help reduce tissue damage after a heart attack or stroke.
Dr. Thomas Merrill, associate professor of mechanical engineering and CEO and co-founder, FocalCool LLC, Mullica Hill, N.J.

For Dr. Thomas Merrill, turning research into bold new medical solutions is a big part of his life’s work.

Merrill’s company, FocalCool LLC, has been studying how its CoolGuide Catheter can rapidly cool tissue and restore blood flow during emergency angioplasty and intracranial thrombectomy procedures to help prevent tissue damage after a heart attack or stroke. He and his colleagues have been buoyed by collaborations and private and federal grants. Most recently, the National Institutes of Health (NIH) provided $270,000 to fund Merrill’s additional heart research in conjunction with investigators at Emory University and Reperfusion Therapy Inc., both in Atlanta.

“For Rowan encourages future innovators ... When students see commercialization at work, it speaks to them about possibilities where they can branch out and explore their own ideas.”

Through the resources and backing of Rowan, researchers like Merrill work in an environment that inspires innovation. “Rowan encourages future innovators, providing access to research facilities and the nurturing of raw human intellect. We have had 12 biomedical interns in our lab; several now work in the biomedical field, and two are pursuing medical degrees. When students see commercialization at work, it speaks to them about possibilities where they can branch out and explore their own ideas.”

Merrill also emphasizes that Dr. Anthony Lowman, the College’s dean, and Dr. Kenneth Blank, vice president for Health Sciences, both who are experienced in the commercialization of medical products, provide invaluable support to his efforts, as well as those of other innovators. He points to the increase in the number of invention disclosures arising from the College’s engineering clinics program as proof that innovation is thriving.

In partnership with Dr. Jennifer Kadlowec, professor of mechanical engineering, and other researchers from Cooper Medical School of Rowan University, Camden, N.J., and Harvard University, Cambridge, Mass., Merrill is working to develop innovations and future innovators as well. Leveraging a five-year, $200,000 NIH grant, Kadlowec and Merrill are spearheading research efforts that will use team-based design teaching practices to create medical solutions that can be translated from an engineering laboratory to a hospital bedside.

“I hope students can harness their experiences at Rowan to pioneer new concepts. The top problems our society faces — whether they relate to medical costs or energy — depend on innovation,” notes Merrill.

To help reduce the risk of seatbelt-related injuries in automotive crashes, mechanical engineering major Mark Schneider ’13, of Swedesboro, N.J., developed an innovative new seatbelt, and fellow mechanical engineering majors Stephan Brinckmann ’13, of Clinton, N.J.; Mia Korngruen ’13, of Cranford, N.J.; and William Sansalone ’13, of Pittsgrove, N.J., joined him in researching the device. Schneider explained the product to a panel of judges during the Business Plan Competition sponsored by the Rohrer College of Business in March 2013, underscoring important ties between engineering education and entrepreneurship.
Testing the Waters in Engineering

Millville Memorial High School teacher Richard Zucal and Rowan students Matt Tovinsky, Tarynn Huitt, Gina Tierno and Dave Krause (back row, left to right) join Millville freshmen Robert Smith (front row, left) and Joe Nelson as they watch the high school team's underwater robot perform during the SeaPerch® competition.
As families, teachers and school administrators crowded the bleachers in the Esbjornson Gymnasium, Rowan hosted a novel swim meet last spring for the most unlikely creatures: remote-controlled underwater robots.

Built by middle and high school students for South Jersey’s first regional SeaPerch® competition, the robots offered their creators a one-of-a-kind sneak peek into science, technology, engineering and math careers as students constructed and tested their devices. This event, coordinated by the College and the Naval Air Systems Command in Lakehurst, N.J., was one of many that continues to showcase the College’s commitment to engaging students in the excitement of engineering.

With spectators’ cheers echoing from the gymnasium walls, students plunged their creations into the pool and intently watched them motor through the watery depths during speed trials and an obstacle course. Afterward, the robots were taken to Rowan Hall to undergo creativity and engineering evaluations.

The following groups participated in the event: The Burlington School District, U.S. Sea Cadet Lakehurst Squadron, Manchester School District, Harlington SeaPerch® Club in Mt. Laurel, Marine Academy of Technology and Environmental Science (MATES) in Ocean County, Lacey Township School District, Colts Neck High School Reserve Officers Training Corps and Millville School District, all in New Jersey.

The Burlington School District’s Sea Knights, a middle school team, and the MATES high school team captured top honors. The winners went on to compete in the National SeaPerch® competition in Indianapolis, where Burlington’s Sea Knights took first place in the middle school obstacle course.

Regardless of the outcome of the underwater challenge, all of the students emerged as winners — gaining hands-on experience and knowledge that they will carry with them into the future.

Engineers on Wheels, an innovative program that sends Rowan Engineering’s specially equipped vans into the area to introduce engineering concepts to K-12 students, brought the excitement of engineering to those attending the Philadelphia Science Festival last April. This 10-day event celebrates science and technology in everyday settings, inspiring participants to view the world around them with a sense of curiosity. Drawing more than 100 partners, this annual event was presented by The Dow Chemical Company and organized by The Franklin Institute.
Dr. Ravi Ramachandran, professor of electrical and computer engineering, earned the University’s first Transforming Undergraduate Education in Science (TUES) Technology, Engineering and Mathematics Type 2 grant from the National Science Foundation, receiving about $600,000 in TUES funding for a collaborative effort.
Technology and science can be powerful allies in the fight against crime. One important and growing resource in cyber security, crime investigations and other related applications is biometrics. This high-tech field offers the ability to recognize and authenticate people through their physical characteristics, such as fingerprint and hand geometry, and behavioral traits, such as speech and gait.

Led by Dr. Ravi P. Ramachandran, a team of Rowan engineering faculty and students is championing a project that is researching advances in biometrics and helping educate future scientists in this dynamic area.

The National Science Foundation (NSF) provides valuable support for the education and research efforts. Funding includes Rowan’s first NSF Transforming Undergraduate Education in Science (TUES) Technology, Engineering and Mathematics Type 2 grant awarded to Ramachandran. The grant supports the team’s biometrics research and enables Rowan to collaborate with other schools, including Bucknell University and Tennessee State University, and share its educational innovations.

The project vertically integrates a multi-year interconnected biometrics curriculum — from middle school through four years of undergraduate education — enabling students to begin with well-structured experiments at the lower levels and continue on to increasingly complex projects at higher levels. As the lead institution for this project, Rowan is partnering with Rowan College at Gloucester County and Pitman and Washington Township high schools in New Jersey.

“Through this model, universities without sufficient resources to create a new undergraduate biometrics program will be able to offer biometrics experiments throughout a four-year electrical and computer engineering curriculum,” notes Ramachandran.

Joining him on the Rowan project team are Dr. Steven Chin, associate dean; Dr. Kevin Dahm, associate professor of chemical engineering; Dr. Robi Polikar, assistant professor and chair of Electrical and Computer Engineering; and Dr. Gina Tang, associate professor of electrical and computer engineering. Also contributing to the research are graduate students Megan Frankle ’12, Robert Mudrowsky ’10, Steve Rieger ’12, and Demiyan Smirnov ’12, who began their work on the project as undergraduates through the Rowan engineering clinics program, along with Sara Davis ’12. The group will report on its progress at conferences and in published papers.

Dr. Gina Tang, associate professor of electrical and computer engineering, is collaborating with Dr. H. Warren Goldman, chairman and chief of neurosurgery, and Anthony L. Aita, neurosurgical technical coordinator, Cooper University Hospital, to develop a wearable surgical navigation system. This technology would enable surgeons to simultaneously view the operative field along with the surgical navigational progress through a near-to-eye display.
Formulating New Remedies for Back Pain

Dr. Jennifer Vernengo (left) and Dr. Cristina Iftode are working to develop substances that may help damaged disc tissue regenerate and heal.
If you are one of the millions of people who suffer the debilitating effects of back pain, Dr. Jennifer Vernengo is in your corner. For many years, the Rowan researcher and professor has explored ways of applying her knowledge and experience with polymer materials to the development of new treatments for back pain — one of the most common medical problems.

She began her efforts as an undergraduate and continued to research solutions during graduate school and at Rowan. Although her initial work focused on developing materials to replace the degenerated disc that causes pain, Vernengo now is concentrating on creating implants that will help tissue regenerate and heal.

“This research gives me the opportunity to take what I love — learning about polymers — and use that in medicine, applying it to a problem that impacts so many people,” she notes.

Vernengo is trying to fill the gap where earlier research has fallen short. In similar efforts involving the application of polymers, many of the materials utilized are expelled easily or migrate in the spine. Her cure: developing an injectable biomaterial for the intervertebral disc that supports cell life and adheres to the tissue so it stays in place.

**“Rowan is a great setting for my research.”**

Assisting in the research are a number of valuable collaborators at Rowan, including Dr. Cristina Iftode, associate professor of biological sciences, who is a major contributor to the biological aspects of the project; and Dr. Jennifer Kadlowec, professor and associate chair of the Mechanical Engineering program, who is focusing on the mechanical components of the research. The National Institutes of Health is providing funding for the research efforts.

“Rowan is a great setting for my research. I’m grateful to partner with such diverse scientific collaborators who will help me make a difference in the field. I also love engaging undergraduates in my work and find it rewarding that a number of students who worked on my projects have continued on to pursue graduate research or careers in biomaterials,” says Vernengo.
Dean Dr. Anthony Lowman, Henry Rowan, New Jersey
Gov. Chris Christie, State Senate President Steve Sweeney, Rowan University President Dr. Ali Houshmand and Rowan Board of Trustees Chairman Linda Rohrer (left to right) break ground for the College’s second building.
Breaking Ground for the Future

A second building for the Rowan University College of Engineering soon will rise to support the implementation of the College’s strategic growth plans.

The state-of-the-art structure will allow the College to further develop innovative academic and research programs and allow even more students to access its world-class educational resources. Housed next to the existing Henry M. Rowan Hall, the building will accommodate more than 2,000 students in new and expanded undergraduate, graduate and doctoral programs, while also enabling the College to double its faculty during the next five years. The project is being made possible in large part by $45.9 million in State funding.

By supporting the College’s research agenda, the new facility also will be a catalyst in extending Rowan’s reach throughout global industries and enhancing alliances with government partners. Both current and new faculty will have access to even greater resources to concentrate on research and educational programs that emphasize translational research, leading to the development of technologies that address societal problems.

As part of its ongoing growth strategy, the College will continue to focus on projects sponsored by the National Science Foundation, National Institutes of Health, Department of Energy and Department of Transportation. It also will remain committed to expanding industrial ties, harnessing the industrial research performed in the engineering clinics program and emphasizing collaborations with mission-oriented agencies such as the U.S. Department of Defense.
In Gratitude

Thank you to our generous donors who contributed between July 1, 2012, and June 30, 2013, and help make the Rowan University College of Engineering an outstanding, nationally recognized engineering program.

Engineering Alumni
David J. Bound ’08
David ’01, M’03 and Christina M. Bowen ’01
Michael J. Burg ’01
Christopher A. Burke ’06
Stephanie Michelle Camilo ’11
Philip Castro ’12
Michael D. Ciocco ’01, M’02
Laura Coleman ’03
Jerry L. Costa ’00
Jason K. Daniel ’00
Desiree Deshmukh ’03, M’04
Paul J. ’08 and April Diglio
Christopher W. Dromgoole ’00, M’03
Stephen C. Duke ’04
Kyle Gandy M’10
Ken Gemmell ’00
Nick A. Giacopelli ’08, M’12
Gregg H. Green M’01
Jonathan Hogg ’10
Terrance J. ’08 and Susan Hopely
Joseph D. Horton M’09
Peter Mark Jansson M’97
Christopher ’03, M’04 and Brianne Kanach ’02
Steven J. Latman ’08, M’09
Thomas J. Lee ’04
Terry L. Lott ’04
Edward Lucas ’07
Kevin A. Martin ’00
Kelli Lynn Martino ’11
Ryan A. McGowan ’07
David S. McKenna ’07
Paul Andrew Meyer M’07
Joseph Miller III ’01
Christopher Nick Moreno ’12
Paul Natalino ’11
James and Catherine Ni ’00
Matthew A. ’08 and Kimberly D. Pavelchak ’08
Michael L. Resciniti ’02
James D. Roche M’11
Manning J. Smith IV ’05
Joseph J. Switzer ’01
Caitlin E. Terry ’05
Andrew Ryan Tomaino ’10
Kenneth Whelan ’02, M’10
Thomas Xenakis ’00*

Parents, Staff and Friends
Anonymous
Mauricio Borrero
Paul Boyer*
Madeline Brozozowski
Antonio Cammarata
Glenn and Lorraine M. Chapman
Steven and Jacqueline Mae Chin
Darren Clarke
Jacob M. Cooper*
Neil Cooper*
Edward Cummings
Chester W. and Patricia Dawson
David A. Delizze, P.E.*
Donna Donnelly
Gary Doyon*
Moira Egan
Jess W. Everett
Deanne P. Farrell
Michael Fischette*
Donald and Zenaida Otero Gephardt
Stephen A. Gettings ’76
Joseph Haden
Letha A. Hammon*
Robert Paul and Fiona L. Hesketh
Maria L. Hildebrand ’80, M’92
Greg Hopper
Beverly Irick ’66
John R. and Patricia Jones
Jennifer Kay and Redmond English
Karen Kovach
Anthony Lowman
Ann P. MacLearie
Shreekantan A. Mandayam
John H. Martinson*
William L. and Sandy Elizabeth Maxwell ’69, M’84*
J. David McCann
Francesca McClay ’87
Yusuf Mehta
Oliver J. Palumbo ’76
Maria Perez-Colon M’08
Patricia A. Quigley ’78, M’03
Theresa Raicyzk
Patricia Rieger
Henry and Lee Rowan*
Keith H. Sansalone ’76
Gerald A. and Linda Sarno
Reinhardt and Joan Schornstaedt
Manning J. III and Virginia Rowan Smith*
Gerald and Rosemarie N. Speitel
Mary M. Staehle
Brian E. and Claire D. Steager ’00, M’02
Beena Sukumaran and Srinivasan Vanchinathan
Karen L. Swift
Hong Zhang

Organizations
Analectro Tech Representatives LLC*
Ancero LLC*
Boeing Co.
Concord Engineering Group Inc.*
Egizi Funeral Home
Exxon Education Foundation
ExxonMobil Foundation*
Greenman-Pedersen Inc.
Hankin Foundation
IEEE Aerospace and Electronic Society*
Indel Inc.*
L-3 Communication Systems*
Lockheed Martin Corp.*
Lockheed Martin Matching Gift Program
Maenner and Associates
Martinson Family Foundation Inc.*
Max and Dora Cooper Family Foundation*
NuStar Foundation
Pennoni Associates Inc.*
Phillips 66 Matching Gift Program
Professional Engineering Society of Southern
New Jersey*
PSEG Foundation*
PSEG Power LLC*
Henry M. Rowan Family Foundation*
Saladworks
Sony DADC
South Jersey Industries*
Verizon Foundation

*Denotes gifts of $1,000 and more or President’s Forum giving club membership. Graduates of the last decade are eligible for the President’s Forum membership with gift credits of $500.