



HENRY M. ROWAN
COLLEGE OF ENGINEERING

BUILT ON
Excellence



More than two decades ago, Henry Rowan had a vision to transform engineering education. Our college made good on Mr. Rowan's dream, attracting stellar faculty and students from around the world to build a program that would soon become recognized for our unique approach to undergraduate engineering education.

In 2013, building on an exceptional past, our College and University embarked on the development of a world-renowned research program. That research has enabled us to increase our enrollment, expand our world-class facilities, and further enhance our state-of-the-art undergraduate program. All of the College's students benefit from this respected and industry-responsive research program.

In the past six years, our University has transformed from a regionally recognized, primarily ranked undergraduate institution into a nationally ranked university with recognition from the Carnegie Classification of Institutions of Higher Education as an R2 (high research activity) doctoral university. We are the second public comprehensive research university in the State of New Jersey.

Today, Rowan University and the Henry M. Rowan College of Engineering are more in demand and more respected than ever before — and with good

reason. The College's commitment to extraordinary education and research have helped the University earn Carnegie R2 status. What makes Rowan's recognition especially distinctive is our commitment to fostering research opportunities in the undergraduate program, as well as our robust interdisciplinary collaborations.. This extends beyond the walls of our Rowan and Engineering halls, and includes health sciences and research partnerships with industry, government and other entities. Together, we develop and implement innovations to improve people's lives and our world.

Proud of our core commitment

Regardless of how much we grow, the fundamentals have not changed. Our College is committed to providing a strong, hands-on undergraduate education. We continue to offer research opportunities at the undergraduate level that many schools only offer to master's and doctoral students. And we produce students who can move seamlessly into careers, equipped with technical and communication skills, and experience collaborating on multidisciplinary projects.

Indeed, we are proud of our College.

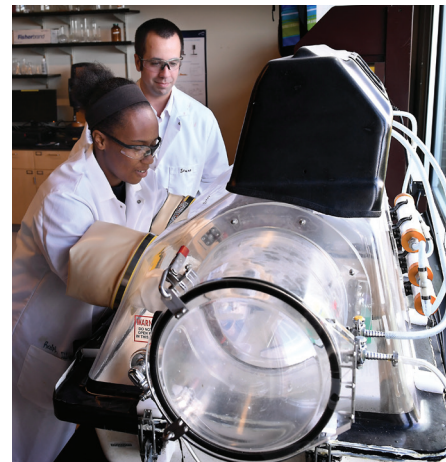
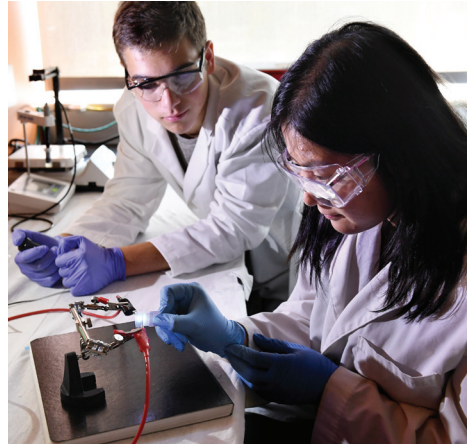


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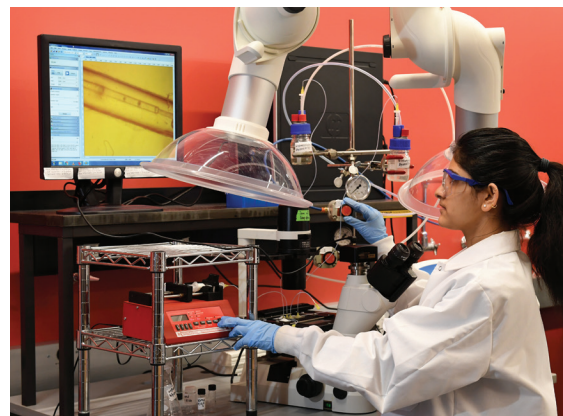
OUR VISION

The Henry M. Rowan College of Engineering will be at the forefront of undergraduate education, graduate education and engineering research, with an emphasis on interdisciplinary collaboration, innovation and entrepreneurship.



OUR MISSION

To create knowledge through teaching and research, and to produce versatile leaders with technical expertise of considerable depth and breadth; to study and solve the National Academy of Engineering's "Grand Challenges" for the 21st century, and to improve the quality of life and create a better society.





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RECENT MILESTONES



The College has seen tremendous change and growth since 2012.

2013 Rowan University receives research university status from the State of New Jersey

2014 Biomedical Engineering program founded
Ph.D. program established

2015 College of Engineering renamed
Henry M. Rowan College of Engineering
Rowan Family Foundation Global Fellowship Endowment established

The College adopts a new strategic plan to address the National Academy of Engineering's "Grand Challenges" for the 21st century

2016 Experiential Engineering Education Department founded

Center for Research and Education in Advanced Transportation Engineering Systems (CREATES) (\$2.5 million facility) opens at the South Jersey Technology Park at Rowan University

2017 Engineering Hall dedicated (\$70.3 million project)

Full renovation of Rowan Hall begins (\$9.8 million project)

College secures \$2 million National Science Foundation Revolutionizing Engineering Departments grant to enhance recruitment and retention efforts, and to enhance diversity and inclusion among underserved populations

Rowan University receives Carnegie Classification as a research university

Rowan University is ranked among "national universities" by *U.S. News & World Report*

2018 Henry M. Rowan College of Engineering ranked a top 25 program for undergraduate engineering education by *U.S. News & World Report*

Engineering Technology Department founded

The College's first Biomedical Engineering undergraduates and first Ph.D. students graduate

College secures \$3.4 million award from U.S. Department of Defense for CREATES to improve strategic cold regions infrastructure

College secures \$1.3 million award from the U.S. Department of Education. The Graduate Areas of Assistance for National Need grant is designed to foster Ph.D. fellowships in Artificial Intelligence and Machine Learning

2019 The U.S. Department of Defense awards \$14.5 million, Rowan University's largest research award, for a cold-spray additive manufacturing program overseen by the Advanced Materials & Manufacturing Institute

College graduates students from first undergraduate cooperative education program with Lockheed Martin

Dean Anthony Lowman, Ph.D., is appointed Rowan University provost and senior vice president

Dr. Stephanie Farrell, department chair and professor in Experiential Engineering Education, is appointed interim dean

THEN AND NOW

Rowan Engineering's growth is evident in the numbers. Undergraduate enrollment alone has more than doubled.

	2012	2019
University enrollment	12,945	19,500
Engineering undergraduate enrollment	780	1,583
Graduate enrollment	39	224
Faculty	33	79
Departments	4	6
Graduates (per year)	129	300

INTERESTING FACTS

2018 first-year: 385 first-time students (3.9 GPA, 1322 SAT) and 82 transfers

Student retention rate: >90%

Graduation rate: 83%

Class of 2019 career or graduate school placement: 94%



PARTNERSHIP INITIATIVES

The Henry M. Rowan College of Engineering has a successful history of collaborating with the professional engineering community to develop distinctive programs and specialized workforce credentials that empower graduates with both engineering expertise and professional acumen.

Rowan's signature undergraduate Engineering Clinic program—an eight-semester sequence of courses—provides students with opportunities to work directly with industry, foundation, and government agency sponsors to solve real-world engineering problems. The clinic program fosters interdisciplinary collaborations and promotes project-based learning.

As Rowan Engineering continues to invest in its nationally recognized clinic program, it is pleased to offer expanded industrial partnership opportunities through the introduction of formal cooperative education programs (co-op). Co-op programs award academic credit to students who complete formal internships and onsite coursework with professional engineering community sponsors. Co-op students enjoy unique opportunities to seek mentorship from industry professionals, who often serve as program faculty and project supervisors.

Rowan's first co-op program, sponsored by Lockheed Martin, placed student interns at Lockheed Martin's Moorestown campus, where they also complete a sequence of combat systems engineering courses. Students earn both a certificate of undergraduate study in combat systems engineering and a bachelor's degree in electrical and computer engineering, completing their studies and earning multiple credentials in just four years.

Fittingly, the State of New Jersey honored the partnership with its inaugural Innovative Partnership Award in 2017. The award recognizes high-quality collaborations among higher education institutions, business and industry.

The College's expanding co-op program ensures that students will continue to receive a world-class education and industry partners will have even greater opportunities to tap into the resources of Rowan Engineering and its exceptional students and graduates. The College's approach to industry and agency collaboration creates pipelines to professional opportunities for students upon graduation, contributing to the College's success in placing graduates in engineering careers.

Rowan Engineering has dozens of other partnerships—some new, some more than 20 years strong—with government, industry, nonprofit organizations and academia. Those partnerships involve organizations with projects in Rowan's backyard and as far as the North Pole.

RESEARCH CENTERS

Advanced Materials & Manufacturing Institute (AMMI)

AMMI advances fundamental and applied science and engineering technology related to materials and manufacturing with the vision to utilize nature's chemistries, both renewable and fossil reserves, to enhance material performance and improve our global sustainability by gaining a comprehensive understanding of the processing-structure-property relationships of materials through advanced experimental, analytical and modeling techniques.

Center for Research and Education in Advanced Transportation Engineering Systems (CREATES)

CREATES conducts cutting-edge, applied and readily implementable research in transportation engineering. The Center seeks to ensure a diverse working environment that educates and trains the next generation of professionals, and enhances the skill sets of the current workforce that can meet the engineering demands of the 21st century.

Sustainable Facilities Center (SFC)

The Center helps public and private entities sustainably manage facilities by reducing the environmental, economic and social impacts of buildings. The faculty associated with the SFC have worked on sustainable facilities projects since before 2004. These efforts resulted in the founding of the SFC in 2018.

Virtual Reality Center

The Virtual Reality Center's team of experts create innovative virtual reality and augmented reality applications. The Center offers a one-of-a-kind collaborative environment built to support cutting-edge research by the University's students and faculty, as well as community, nonprofit, government and corporate clients.



ENGINEERING CLINIC & COOPERATIVE EDUCATION

Combat Systems Engineering Cooperative Education Experience

Lockheed Martin

Students participate in a formal co-op program with on site internships and specialized courses with the potential of earning multiple credentials.

Engineers Without Borders

Engineers Without Borders Rowan Chapter

The Rowan Chapter has a team of multidisciplinary engineering students who coordinate with faculty and apply their curriculum to solve real world problems locally and internationally.

MemSat-1U Rowan Cube Nanosatellite

National Aeronautics and Space Administration (NASA)

Students engage in evaluation of memory technologies in a space environment for NASA, including payload, control and data, electronic power, communication and structure subsystems.

Water Recovery & Reuse

U.S. Environmental Protection Agency; Nestlé USA Beverage

Team works on a vibratory-field membrane process for food/biomass waste processing in spray-dried and freeze-dried coffee.

Modular Fabrication System

Rowan University Venture Fund

Team develops tool that performs 3D printing, laser engraving and CNC milling manufacturing operations at a competitive price point to stand-alone systems.

National Guard Armory Building Audits

New Jersey Department of Military & Veterans Affairs; Army National Guard

Students conduct building audits by inventorying all water- and energy-consuming devices, and provide recommendations for energy and water efficiencies.

Optimization of Pipeline Flushing Operations

ExxonMobil

The Rowan Engineering clinic project team works to improve the efficacy of flush methods for product fill lanes used for the various grades of lubrication oil produced at the ExxonMobil blending plant. Rowan Engineering team members seek to propose several novel solutions to make operations more efficient by reducing the amount of flush oil used in change-outs.

Polymer Nanocomposites with Enhanced Dielectric Strength and Reduced Thermal Contraction for Superconductor Cables

Naval Surface Warfare Center

Clinic project focuses on developing nanocomposite-enhanced polymers with enhanced dielectric strength for superconducting cables, which involves a large multidisciplinary team of undergraduate and graduate researchers who are actively exposed to unique challenges associated with using superconductors in naval applications.



Students in Civil & Environmental Engineering work with Dr. Beena Sukamaran following Hurricane Sandy.

Biomedical Engineering

Biomedical Engineering demonstrated student, faculty and program achievements early in its existence.

	2014	2019
Undergraduate enrollment	42	168
Doctoral student enrollment	4	30
Starting salary	\$75,000-\$90,000	

RECENT HIGHLIGHTS

2014 Biomedical Engineering Department (BME) is formed, first undergraduate class and Ph.D. students enroll

2015 Accelerated 3+4 BS/DO with Rowan University School of Osteopathic Medicine established
Accelerated 3+4 BS/MD with Cooper Medical School of Rowan University established

2016 Dr. Peter Galie wins major American Heart Association Research Grant for “Establishing a Mechanistic Link Between Cerebral Blood Flow and the Blood-Brain Barrier” and publishes groundbreaking work in the area in the journal *Biomaterials*

2017 Dr. Mohammad Abedin-Nasab wins PA Science Center competition to create medical robotics company, Robossis, producing orthopedic surgical robots

Dr. Vince Beachley, first BME faculty member, wins National Science Foundation (NSF) CAREER Award to study novel electrospinning methods and materials

Department accelerates three major, faculty-led medical device startup companies with Rowan Innovation Venture Fund

2018 Department graduates first undergraduate class and achieves first ABET accreditation with highest marks

BME undergraduates lead University in national prestigious undergraduate scholarships

Two NSF graduate research fellowships, one honorable mention, and three Goldwater Scholarship winners

Department establishes new NSF Research Experiences for Undergraduates Site in Biomedical Materials, Devices, Therapeutics and Emerging Frontiers

Department graduates first BME Ph.D. students

2019 BME faculty members surpass \$8.5M in major agency/National Institutes of Health/NSF/ industrial/major foundation extramural funding



RECENT HIGHLIGHTS

- 2012** With Pfizer Inc. and the U.S. Environmental Protection Agency (EPA), department develops a sustainable design toolbox for pharmaceutical manufacturing
- 2013** With Johnson Matthey, department investigates a new process to recover and reuse nitric acid
- 2014** With DuPont and the EPA, department develops sustainable pollution prevention design for batch-based specialty chemical manufacturing
- 2015** With Johnson Matthey, department removes nickel in waste stream using a soluble polymer
- 2016** Department develops a road map for Nestle and the EPA in food processing intensification methods
- 2018** With the EPA and other partners, department develops a road map for solvent recovery for industrial manufacturing

Dr. Martin Haase receives a National Science Foundation CAREER Award, the first in Chemical Engineering's history



Department hosts the ninth International Conference on Engineering Education for Sustainable Development, the first time prestigious conference was held in the United States

- 2019** Department receives \$14.3 million grant from the U.S. Department of Defense for Advanced Materials & Manufacturing Institute

With ExxonMobil, department optimizes pipeline flushing operations at the company's lubricant oil blending plant

Department expands its footprint in Rowan Hall, doubling research and teaching spaces

Chemical Engineering

Long a national front runner in engineering education, Chemical Engineering continues to innovate in the classroom and in the lab.

	2012	2019
Undergraduate enrollment	192	197
Average starting salary	\$66,000	\$73,000
Students who graduate per year	45	48

Retention rate: 90%

Civil & Environmental Engineering

Civil and Environmental Engineering is a leader in the design and maintenance of smart cities, as well as in promoting diversity in engineering education.

	2012	2019
Undergraduate enrollment	178	351
Average starting salary	\$50,000	\$60,000
Students who graduate per year	27	63

Retention rate: 85%

RECENT HIGHLIGHTS

2015 Resiliency Planning for Communities Computation Lab created

2016 Three '14 alumni become National Science Foundation (NSF) graduate research fellows at Carnegie Mellon University, the University of Michigan and University of Virginia

First civil engineering program in the nation to receive \$1.92 million NSF Revolutionizing Engineering Departments grant for diversity education

Center for Research and Education in Advanced Transportation Engineering Systems (CREATES) established

2017-2019 Juniors Kayleigh McDevitt, Jerome Malaran receive the \$10,000 Sol Seid Award

Junior Christopher Haugland receives the \$10,000 Moles Scholarship

2018 Sustainable Facilities Center established

Intelligent Transportation Systems Laboratory established

Dr. Sarah Bauer, a Civil & Environmental (CEE) alumna, joins the faculty after receiving her Ph.D. from the University of Virginia

Dr. Cheng Zhu receives an NSF Innovation Corps grant titled "The Shaker Shield— An Innovative Technology for Inhabitant Protection in High Seismic Risk Areas"

Taylor Groves '19 named Best Entrepreneur Lead, NYC Innovation Node, for the "Shaker Shield" project

Dr. Yusuf Mehta and his CREATES team receive \$3.4 million from the U.S. Department of Defense for innovative construction materials for cold regions applications, the largest award at the Glassboro campus

CEE Alumna Patricia Hurley '18 receives the \$10,000 George W. Laird Merit Fellowship at the University of Delaware

2019 Sustainable Facilities Center grand opening

Dr. Yusuf Mehta and his CREATES team receive an additional \$3.4 million from the U.S. Department of Defense to continue their research

Sustainable Facilities Center wins the 2019 Army Community Partnership Award. These awards recognize exceptional community partnerships that have improved readiness, driven modernization and contributed to reform initiatives throughout the U.S. Army

RECENT HIGHLIGHTS

- 2016-present** Students organize ProfHacks, an annual hacking marathon open to high school and college students that has grown to 250 participants in three years
- 2017** Department moves into Engineering Hall, more than doubling its footprint
- 2018** Department receives Innovative Program of the Year Award from the Electrical and Computer Engineering Department (ECE) Heads Association

Department establishes College's first formal cooperative education program with Lockheed Martin

ECE faculty and students design and build—through an engineering clinic course—a cubesatellite launched into orbit by NASA



- 2017-2018** Department establishes a unique nine-month co-op program with Lockheed Martin, allowing students to graduate in four years with an additional certificate in Combat Systems Engineering—the only program of its kind in the nation

Department receives \$1.3 million U.S. Department of Education Graduate Assistance in Areas of National Need award to develop Ph.D. fellowships in Artificial Intelligence and Machine Learning
- 2019** Department receives a new six-year accreditation with several program strengths highlighted by ABET

Department ranked as #15 in best undergraduate degree programs by *U.S. News & World Report*
- 2019-2020** Department starts a new B.S. in Electrical Engineering Technology, a 3+1 program in collaboration with Rowan College at Burlington County



Electrical & Computer Engineering

Electrical & Computer Engineering is a ground breaker in research and innovative learning experiences.

	2012	2019
Undergraduate enrollment	189	350
Average starting salary	\$62,000	\$71,000
Students who graduate per year	33	77

Retention rate: 85%

Experiential Engineering Education (ExEEd)

The department manages the engineering entrepreneurship degree, which supports students who wish to invent, develop and commercialize products and services.

ExEEd was launched in September 2016 to:

- Lead the College’s undergraduate engineering educational mission for first- and second-year students
- Catalyze the translation of educational innovations into the classroom
- Cultivate a collaborative environment for engineering education research

	2012	2019
Number of first- and second-year students in the college	423	630

RECENT HIGHLIGHTS

2016 ExEEd Department is founded

First Engineering Entrepreneurship undergraduate students enroll

2017 ExEEd moves into its new home in Engineering Hall.

Led by ExEEd, the Henry M. Rowan College of Engineering is selected to join the KEEN network. KEEN is dedicated to transforming undergraduate engineering education through an entrepreneurial mindset.

ExEEd Founding Chair Dr. Stephanie Farrell becomes American Society for Engineering Education (ASEE) President

Dr. Cheryl Bodnar receives national Raymond W. Fahien Award for outstanding teaching effectiveness and educational scholarship from the ASEE Chemical Engineering Division

Dr. Cheryl Bodnar receives a grant from the National Science Foundation (NSF) to develop experiential process safety training

2018 ExEEd hosts the ASEE’s national First-Year Engineering Experience Conference.

Dr. Stephanie Farrell receives a grant from the NSF for a project to promote Diversity and Inclusion in Engineering nationwide.

Dr. Stephanie Farrell receives the Nikola Tesla Chain for outstanding achievement in engineering education, the highest honor from the International Society for Engineering Pedagogy.

Dr. Scott Streiner launches Rowan’s Global Engineering Education initiative.

2019 ExEEd enrolls first PhD students.

Engineering Entrepreneurship student Michael Weinberg selected as Stanford University Innovation Fellow.

ExEEd undergraduate Clinic Team earns distinction in ASEE’s Best New Ideas in Entrepreneurship and Innovation competition for their paper presented at the annual conference in Tampa.

Dr. Kaitlin Mallouk receives a grant from the NSF to study the impact of engineering guilds with respect to the adoption of research-based instructional practices.

2020 ExEEd graduates first class of engineering entrepreneurship majors.



RECENT HIGHLIGHTS

- 2015** Undergraduate research (summer junior/senior clinic) funded through Naval Engineering Education Consortium, New Jersey Health Foundation, National Institutes of Health

Rowan engineers take third place in North American Baja car competition

Labs renovated and upgraded (\$3+ million)
- 2016** Stanford program names Rowan students University Innovation Fellows
- 2017** Rowan placed 13th of 80 teams in American Society of Mechanical Engineers Design Competition

- 2018** Rowan team chosen for 2018 NASA Revolutionary Aerospace Systems Concepts—Academic Linkage Mars Ice Challenge

Undergraduate research opportunities expand through recent Graduate Assistance in Areas of National Need award (U.S. Department of Education), international undergrad intern exchange (e.g., University of the Philippines)

U.S. News & World Report (2020 edition) ranks program 17th in Best Undergraduate Engineering Programs (master’s or bachelor’s category)

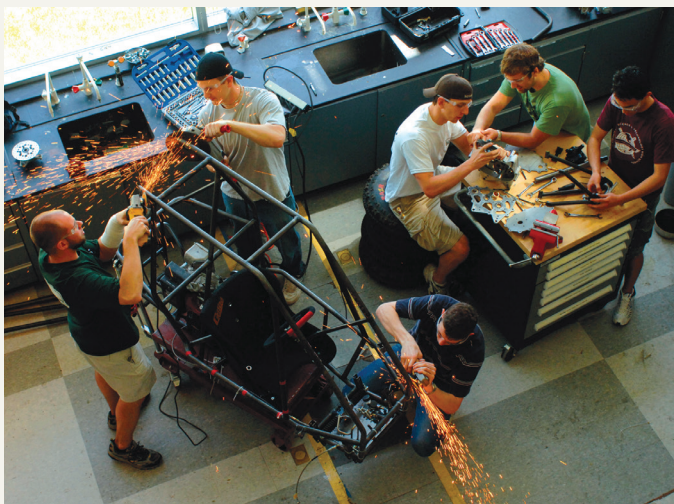


Mechanical Engineering

The nationally ranked Mechanical Engineering program continues to achieve in numerous fields.

	2012	2019
Undergraduate enrollment	141	402
Average starting salary	\$59,000	\$70,000
Students who graduate per year	29	98

Retention rate: 93%







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