





2022 HIGHLIGHTS

Henry M. Rowan College of Engineering







A MESSAGE FROM THE DEAN



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2022 HIGHLIGHTS

Dear Friends:

This past year, the Henry M. Rowan College of Engineering proudly celebrated its 25th anniversary-we are now over 4,000 alumni strong!-and are providing accessible and affordable pathways for high quality engineering education at all levels. This, in combination with the growing and impactful research endeavors of our students and faculty, is helping Rowan University fulfill the mission of being an economic engine for the region. The college's first doctoral degree was conferred several years ago. Since then, Ph.D. enrollments have increased steadily and 2022 marked our official entry into the ranks of Ph.D.-granting engineering programs.

In the following pages, I am happy to share with you highlights of our progress, including some of the many successes attained by our students, faculty and alumni; the accomplishments of our four research centers; the partnerships we are nurturing with industry; examples of our commitment to an affordable, quality education; and community outreach efforts. In addition, you will find introductions to eight faculty members who joined us this year and will be an essential part of our continued success.

I hope that you enjoy reading this document and that it provides a sense of our goals and what we believe is important for the future of engineering education and the profession.

Sincerely,

Giuseppe R. Palmese, Ph.D. Dean, Henry M. Rowan College of Engineering



"We are providing accessible and affordable pathways for high quality engineering education at all levels."

A YEAR IN REVIEW

The 2021–22 academic year saw continued growth within the Henry M. Rowan College of Engineering. More than 1,700 undergraduate, master's and doctoral students were enrolled in the college, including the largest-ever cohort of engineering Ph.D. students. The academic year closed with 470 new graduates from across all departments and degree levels.



DEPARTMENTS & DEGREES	BS	MS	PhD	PhD/MD	PhD/DO
Biomedical Engineering (BME)					
Biomedical Engineering	√	√	√	√	√
Civil & Environmental Engineering (CEE)					
Civil Engineering	√	√	√		
Chemical Engineering (CE)					
Chemical Engineering	√	√	√		
Electrical & Computer Engineering (ECE)					
Electrical & Computer Engineering	√	√	√		
Experiential Education (ExEEd)					
Engineering Entrepreneurship	\checkmark				
Engineering		√			
Engineering Education			\checkmark		
Mechanical Engineering (ME)					
Mechanical Engineering	√	√	√		

DIVISIONS & DEGREES

Construction & Engineering Management	BA	Master's	
Construction Management	 Image: A second s		
Master of Engineering Management		\checkmark	
Engineering Technology	BS		
Electrical Engineering Technology	√		
Mechanical Engineering Technology	v		
Surveying Engineering Technology	√		

ENROLLMENT BY DEGREE

UNDERGRADUATE	1474
Biomedical Engineering	128
Chemical Engineering	126
Civil Engineering	314
Construction Management	138
Electrical & Computer Engineering	335
Electrical Engineering Technology	4
Engineering Entrepreneurship	32
Surveying Engineering Technology	12
Mechanical Engineering	383
Mechanical Engr Technology	2
MASTED'S	102
Piemodical Engineering	10
Chamical Engineering	10
Civil Engineering	27
Civit Engineering	10
	42
Engineering Management	42
Mechanical Engineering	50
DOCTORAL	106
Biomedical Engineering	21
Civil & Environmental Engineering	22
Chemical Engineering	15
Material Science & Engineering	4
Mechanical Engineering	11
Electrical & Computer Engineering	23
Engineering Education	10

- 10







PUBLICATIONS & RESEARCH



STEPHANIE FARRELL *Professor and Founding Department Head, ExEEd*



BUILDING SAFE SPACES IN STEM

Promoting diversity in STEM is an ongoing mission at Rowan University and one faculty member from the Henry M. Rowan College of Engineering has co-edited a new book examining the queer and trans experience in STEM culture in higher education in the United States.

Dr. Stephanie Farrell, a professor and founding head of the Experiential Engineering Education Department (ExEEd), is co-author and co-editor of "Queering STEM Culture in US Higher Education: Navigating Experiences of Exclusion in the Academy," published June 28, 2022, by Routledge. The book is co-authored and edited by Kelly Cross, an assistant professor at Georgia Tech, and Bryce Hughes, an assistant professor at Montana State University. Farrell co-authored two chapters, "What Do We Know and Why Should We Support Queer and Trans People in STEM?" and "What Does It Mean and Where Do We Go from Here?"

Covering topics like how staff and faculty can create safe spaces for queer people in STEM and celebrating queerness in higher education, the book features contributions from students, faculty, practitioners and administrators. The book is accessible to academics and non-academics alike who are interested in the experiences of queer-identifying people in STEM and how to best support them.

"Queering STEM Culture in US Higher Education" continues Farrell's work in creating more inclusive learning environments. Farrell recently received the inaugural IDEAL Star Award from the American Institute of Chemical Engineers (AIChE) for her work on LGBTQ+ Safe Zone Training in Conference Programming. She was also the principal investigator on the firstever National Science Foundation (NSF) grant for groundbreaking research related to LGBTQ+ people in STEM in 2015. FY22 \$10.6M RESEARCH EXPENDITURES



GROWTH SNAPSHOT: RESEARCH EXPENDITURES

31

2018

57

2020

59

2020

106

2022,

88

2027

THE TOTAL NUMBER OF JOURNAL PUBLICATIONS HAS TRIPLED OVER THE LAST 5 YEARS.

FEATURED FACULTY PUBLICATIONS (PEER-REVIEWED)

DiPasquale SA, Wuchte LD, Mosley RJ, Demarest RM, Voyles ML, Byrne ME. One Week Sustained In Vivo Therapeutic Release and Safety of Novel Extended Wear Silicone Hydrogel Contact Lenses. *Advanced healthcare materials*. 2022; 11(7).

DOI: 10.1002/adhm.202101263

Pagliocca N, Uddin KZ, Anni IA, Shen C, Youssef G, Koohbor B. Flexible planar metamaterials with tunable Poisson's ratios. *Materials & design.* 2022; 215.

DOI: 10.1016/j.matdes.2022.110446

Zhuo Z, Zhu C, Tang CS, Xu H, Shi X, Mark V. 3D characterization of desiccation cracking in clayey soils using a structured light scanner. *Engineering geology.* 2022; 299.

DOI: 10.1016/j.enggeo.2022.106566

Qiu C, Squicciarini AC, Pang C, Wang N, Wu B. Location Privacy Protection in Vehicle-Based Spatial Crowdsourcing via Geo-Indistinguishability. *IEEE transactions on mobile computing.* Published online 2020:1-1.

Chong AM, Salazar SA, Stanzione III JF. Multifunctional Biobased Benzoxazines Blended with an Epoxy Resin for Tunable High-Performance Properties. *ACS sustainable chemistry & engineering.* 2021; 9(17):5768-5775.

DOI: 10.1021/acssuschemeng.1c01338

Kulhanek A, Butler B, Bodnar CA. Motivating first-year engineering students through gamified homework. *Educational action research.* 2021; 29(5):681-706.

DOI: 10.1080/09650792.2019.1635511

WELCOME, NFW FACULTY

GREGORY DITZLER

Associate Professor, Ph.D., Drexel University

Dr. Gregory Ditzler recently joined the college as an associate professor of electrical and computer engineering. He instructs a course on machine learning.

While attending Rowan University as a master's student from 2009 to 2011, Ditzler began his research in machine learning under the advisement of Dr. Robi Polikar. Ditzler earned his Ph.D. from Drexel University in 2015. After



seven years at the University of Arizona as an assistant professor (2015-2021) and associate professor (2021-2022), Ditzler returns to Rowan University, where he is proud to contribute to the institution's increased research output and academic growth.

An NSF CAREER Award recipient, Ditzler focuses his research on lifelong machine-learning algorithms and the impact of adversaries in changing environments, specifically on whether changes are caused by adversaries or natural causes. He is also working in collaboration with Alicia M. Allen, Ph.D., MPH, from the College of Medicine at the University of Arizona to study opioid relapse in the postpartum period. Ditzler utilizes techniques from data science to help understand data from the medical field as it pertains to opioid relapse.

In the classroom, Ditzler's machine learning course is one he helped develop. Students not only learn the fundamentals of machine learning, but also are exposed to current research topics to pique their interest, creating a learning environment that transcends the textbook.

Ditzler received an Outstanding Article Award from the IEEE Computational Intelligence Society Magazine in 2018, the best paper at the IEEE International Conference on Cloud and Autonomic Computing in 2017, and the best student paper at the IEEE/INNS International Joint Conference on Neural Networks in 2014. In 2016 and 2018, he was selected as a summer faculty fellow at the Air Force Research Lab to work on adversarial learning algorithms. He is an associate editor for the journals IEEE Transactions on Neural Networks and Learning Systems, and Cluster Computing.

KENNETH K. S. LAU

Professor, Ph.D., Massachusetts Institute of Technology

Dr. Kenneth K. S. Lau joined the college in July as professor and department head of the Department of Chemical Engineering. Previously, Lau spent 15 years at Drexel University. He received the NSF CAREER Award in 2008.

One of Lau's goals for the department is to increase research momentum to help the University move closer toward Carnegie's R1 designation, granted to doctoral institutions with very high research activity. To achieve this, Lau is actively recruiting new chemical engineering faculty with a passion for teaching and research. As a part of the University's Catalysts for Sustainability program, one of the new faculty hires will have a research focus in sustainability in areas that include advanced green manufacturing processes, methods to reduce or sequester greenhouse gases, renewable energy, sustainable materials, sustainable food systems, and habitat restoration.

Lau also aims to further develop the chemical engineering graduate curriculum to help attract more graduate students. Among these new academic offerings is a new master's degree program in polymer science and engineering, in collaboration with the Department of Chemistry. The department is also in the process of creating other new master's and certificate programs to match the needs of industry and the chemical engineering profession.

In an effort to promote diversity, equity and inclusion, the department plans to host a DEI panel in the spring. Chemical engineers in academia and industry will speak to students about their DEI experiences to encourage the next generation of women and underrepresented minorities in engineering.





Lau's research focuses on polymer thin films with a broad range of applications, including in solar cells and energy storage. He has received funding from the National Science Foundation and Army Research Laboratory, as well as industry partners, such as Syngenta, Lam Research Corporation, and W. L. Gore & Associates.

Lau earned his Bachelor of Engineering in chemical engineering from the National University of Singapore in 1995 and his Ph.D. in chemical engineering from the Massachusetts Institute of Technology in 2000.

INTRODUCING NEW FACULTY



SEYED HOOMAN GHASEMI

Assistant Professor, Ph.D., Auburn University

Dr. Seyed Hooman Ghasemi is an assistant professor in the Department of Civil & Environmental Engineering. He earned his Bachelor of Science in civil engineering from Qazvin University, Qazvin, Iran, in 2007. He received his Master of Science in civil engineering from Zanjan University, Zanjan, Iran, in 2010. In 2015, he earned his Ph.D. in civil engineering from Auburn University, Alabama. Prior to joining Rowan in January 2021, he was a research associate at Washington State University from 2020 to 2021 and an assistant professor at Azad Qazvin University from 2016-2019. His research interests are focused on structural engineering, structural reliability and infrastructural resilience analysis, bridge design and assessment, and probabilistic structural seismic design, as well as fracture mechanics and quantum analysis. He serves as an associate editor of several





CASSANDRA JAMISON

Assistant Professor, Ph.D., University of Michigan

Dr. Cassandra Jamison is an assistant professor in the Experiential Engineering Education Department. She received her Bachelor of Arts in engineering sciences from Wartburg College, Waverly, Iowa, in 2017. She earned her Master of Science (2019) and Ph.D. (2022) degrees in biomedical engineering from the University of Michigan in Ann Arbor. Her research interests focus on understanding how professional learning occurs in experiential and co-curricular learning spaces. She is interested in applying findings from these spaces to build opportunities for marginalized populations in engineering, both in the classroom and as part of co-curricular programming. She joined Rowan University in fall 2022, where she pursues research that explores ways to better prepare biomedical engineering and other engineering students for careers in industry and other professional tracks. Jamison is a member of the American Society for Engineering Education (ASEE) and Biomedical Engineering Society (BMES).



JUSTIN MAJOR

Assistant Professor, Ph.D., Purdue University

Dr. Justin Major is an assistant professor in the Experiential Engineering Education Department. He graduated from the University of Nevada, Reno, with a dual Bachelor of Science in mechanical engineering and secondary education in mathematics. Major received his Master of Science in aeronautics and astronautics (2021) and Ph.D. in engineering education (2022) from Purdue University, West Lafayette, Indiana. He joined Rowan University in fall 2022. His research focuses on socioeconomically disadvantaged students in engineering, student trauma experiences, and critical quantitative methods to engineering education research. Major is a member of the American Society for Engineering Education (ASEE) and American Educational Research Association (AERA).

ISLAM MANTAWY

Assistant Professor, Ph.D., University of Nevada

Dr. Islam Mantawy is an assistant professor in the Department of Civil & Environmental Engineering. Mantawy received his Bachelor of Science (2010) and Master of Science (2013) degrees in civil and structural engineering, respectively, from Ain Shams University, Cairo, Egypt. He earned his Ph.D. in civil engineering from the University of Nevada, Reno, in 2016. Prior to joining Rowan University in fall 2022, Mantawy was a research assistant professor at Florida International University, Miami. His research focuses on structural and bridge engineering, using technologies such as accelerated construction and repair, additive and subtracted construction, and machine learning-based structural health prediction. He is an associate member of the American Society of Civil Engineering (ASCE) and Structural Engineering Institute (SEI) and a member of the Precast/Prestressed Concrete Institute (PCI), TRB Committee on Construction of Bridges and Structures (TRB AKC40), and ASCE's Infrastructure Resilience Division Emerging Technologies Committee.

INTRODUCING NEW FACULTY



PAROMITA NATH

Assistant Professor, Ph.D., Vanderbilt University

Dr. Paromita Nath is an assistant professor in the Department of Mechanical Engineering. She received her Bachelor of Engineering in civil engineering from Assam Engineering College, Guwahati, India, in 2008. She earned a Master of Engineering in structural engineering from the Birla Institute of Technology and Science, Pilani, India, in 2013. Nath then attended Vanderbilt University, Nashville, Tennessee, for her Master of Science (2015) and Ph.D. (2020) degrees in civil engineering. She joined Rowan in fall 2022 to continue research in uncertainty quantification, Bayesian inference, process design and control under uncertainty, and machine learning, with applications in additive manufacturing, health care, and power systems. She is a member of the American Society of Mechanical Engineers (ASME) and American Society for Engineering Education (ASEE).



HUA ZHANG

Assistant Professor, Ph.D., Northwestern Polytechnical University

Dr. Hua Zhang is an assistant professor in the Department of Electrical & Computer Engineering. She received her Bachelor of Science (2011), Master of Science (2014), and Ph.D. (2017) degrees in electrical engineering from the Northwestern Polytechnical University, Xi'an, China. Prior to joining Rowan in fall 2022, she was an assistant research professor at Drexel University from 2018 to 2022, a lecturer at the San Diego State University from 2016 to 2017, and a joint Ph.D. student at the University of Michigan-Dearborn from 2014 to 2015. Her research focuses on high-efficiency power electronics technology, which leverages next-generation wide bandgap semiconductor devices, especially for electric vehicles, wireless charging, and smart power grid applications. Zhang is a member of IEEE.

FACULTY BY THE NUMBERS













Rowan University ranked in the **TOP 50** universities with the HIGHEST % of female tenured & tenure track faculty.



FACULTY HIGHLIGHTS

SELECTED FACULTY ACHIEVEMENTS

Dr. Kaitlin Mallouk (ExEEd) received the 2022 Distinguished Teaching Award for the Middle Atlantic Section of the American Society for Engineering Education (ASEE). The award recognizes professionals dedicated to excellence in engineering education, based on geographic region. Mallouk utilizes innovation in her classroom, allowing students to share interesting and meaningful aspects of themselves, while giving students space to highlight their assets. Mallouk was previously honored with Best Division Paper for the Division of Experimental and Laboratory Studies at the ASEE Annual Conference in 2015. In 2014, she received the Mara Wasburn Early Engineering Education Grant for the Division of Women in Engineering. Mallouk has been an active member of ASEE since 2013.

Dr. Nidhal C. Bouaynaya (ECE) and Dr. Hassan Fathallah-Shaykh, a neurooncologist and mathematician at the University of Alabama at Birmingham Heersink School of Medicine, co-founded MRIMath LLC, a startup company that uses artificial intelligence to improve patient oncology outcomes and treatment response. MRIMath created an artificial intelligence platform to help physicians detect brain tumor growth years earlier than the standard of care. The AI platform, called i 2 Contour, precisely outlines the tumor's 3D coordinates within a matter of seconds. Their recent usability study showed that the AI decreases contouring variability between experts by more than 70%. MRIMath received \$2.5 million from the National Institutes of Health (NIH) Small Business Innovation Research (SBIR) Phases I and II, in 2020 and 2022, which funded the product development. The NIH evaluation ranked MRIMath's performance in Phase I as "exceptional with performance exceeding contractual requirements to the government's benefit." That work is moving closer to the marketplace. A conservative valuation of the target addressable market (TAM) in radiation oncology and neuro-radiology in the United States is \$1.6 billion.

Dr. Mohammad Jalayer (CEE), a researcher at the Center for Research & Education in Advanced Transportation Engineering Systems (CREATES), studies ways to make roads safer. A recent study on distracted driving, the leading cause of fatal crashes in New Jersey, found 20 to 25 percent of drivers on 10 New Jersey roadways were distracted. Jalayer also identified the factors contributing to distracted driving using novel data collection and analytic tools. New Jersey's Office of the Attorney General pointed to the study's results to launch its awareness and enforcement campaign to combat driver inattention.





TEACHING FACULTY SPOTLIGHT

"Rowan students constantly challenge me to discuss tough lessons in my career.
I've incorporated this challenge into my courses to demonstrate how we can actually help each other."

BRUCE OESTREICH

Experiential Engineering Education (ExEEd)

Bruce Oestreich is an instructor in the Experiential Engineering Education Department (ExEEd), teaching engineering design courses. Oestreich focuses on Sophomore Engineering Clinic and New Product Development courses for junior and senior engineering students. Oestreich also serves as faculty adviser to half the students majoring in engineering entrepreneurship, as well as the Society of American Military Engineers (SAME) Rowan Chapter.

Oestreich utilizes his industry experience to provide insight to students on what to expect as a professional engineer upon graduation. He prides himself on his energy and humor to help keep students engaged in the classroom.

"Rowan students constantly challenge me to discuss tough lessons in my career," Oestreich said. "I've incorporated this challenge into my courses to demonstrate how we can actually help each other."

Prior to joining Rowan in 2014, Oestreich spent more than 37 years in the aviation and aerospace industry, working for organizations like The Boeing Company and the U.S. Air Force. Oestreich retired from The Boeing Company in 2013 as director of integrated strategy for all of Boeing's military products.

Oestreich graduated from the Illinois Institute of Technology with a degree in computer engineering. He also completed a master's certificate degree program in systems engineering from the University of Southern California (USC).

GRANT HIGHLIGHTS

EDUCATIONAL TOOLS Dr. Kauser Jahan (CEE) leads a team of civil engineering, electrical engineering, computer science, and education faculty in developing four educational tools that will expose K-12 students in Camden City schools to the functions and skills required for water utility jobs. The \$500,000 grant is one of 10 projects funded by the Environmental Protection Agency through a new grant program established to shed light on careers in water services. The South Jersey Land & Water Trust, American Water, Camden County Municipal Utilities Authority and the Atlantic County Utilities Authority will partner with the Rowan team to adopt and promote careers in water/wastewater utilities.

3D PRINTING FOR THE MILITARY

Continuing a five-year partnership with Pittsburgh-based PPG and the Department of Defense's Army Research Laboratory, Dr. Joseph Stanzione (CHE) and Dr. Giuseppe Palmese, dean of the Henry M. Rowan College of Engineering, are developing additive manufacturing technologies for military applications. The Department of Defense has awarded the collaborators an additional \$1 million in funding to continue research on 3D printing, specifically to develop new processes for 3D printing with polymers. The multidisciplinary research team includes post-doctoral students, graduate students, and undergraduate students in specialties like chemical engineering, and materials and science engineering.



ORIGAMI CONCEPTS Using concepts of the Japanese paper-folding art of origami, Dr. Chen Shen (ME) is studying structures that reduce noise but are flexible because they are folded like origami. The goal is to manufacture more effective soundabsorbing devices. The research is supported by a \$200,000 grant from the National Science Foundation. The researchers will study the acoustics of various scenarios to design origami folds that will best absorb sound in each situation. Rowan University is among the first institutions studying origami structures on acoustic control.

PROTECTIVE MATERIALS Dr. Behrad Koohbor (ME), in collaboration with San Diego State University, has been awarded a \$278,000 grant from the National Science Foundation to study a new kind of protective material called auxetic foams. The project aims to examine the foams on a microscopic level to learn about their properties and determine how to manufacture auxetic foams for commercial use. Koohbor has already studied auxetic foams in shoe soles with promising results. He found that auxetic foam is more effective at absorbing energy than soles with traditional foam. Koohbor is assisted by two graduate students, several undergraduate students, and a doctoral student. New courses and course enhancement modules will also be packaged as new certificate programs of undergraduate and graduate study in power systems engineering at Rowan and implemented in community college.

SURGICAL ROBOTS Dr. Mohammad Abedin-Nasab (BME) continues a decade-long project developing a robotic system to aid doctors in surgeries correcting femur fractures. The National Science Foundation has awarded Abedin-Nasab a \$250,000 Partnerships in Innovation grant to help him further develop the system, called Robossis. With the funding, Abedin-Nasab will develop a prototype of Robossis by late 2023 that satisfies the Food and Drug Administration's safety and efficacy requirements. Should Robossis receive FDA clearance, then Abedin-Nasab can begin testing the system on patients. Until now, Robossis has been tested on cadavers. Using NSF grant funding, Abedin-Nasab will further test the force of the machine and the accuracy of the alignment, first in the lab and then on cadavers. Abedin-Nasab's team includes clinicians, three Ph.D. students, four undergraduate students, and medical students.

SMART GRID ENGINEERING MODULE

Led by **Dr. Jie Li** (ECE), Rowan University is developing a next-generation engineering education module to meet the demand for a new kind of power infrastructure called a smart grid. The three-year project is funded by a \$300,000 grant from the National Science Foundation. The program will include introductory courses to the smart grid and enhancements to existing core electrical and computer engineering courses. New courses and course enhancement modules will also be packaged as new certificate programs of undergraduate and graduate study in power systems engineering at Rowan and implemented in community colleges, such as Rowan College of South Jersey. The project also includes outreach to middle and high schools.



COLD WEATHER CONSTRUCTION

MATERIALS In the largest award in center history, the Army Corps of Engineers-Department of Defense has awarded a \$5.2 million grant to Rowan University's Center for Research & Education in Advanced Transportation Engineering Systems (CREATES). The ongoing research includes the development of new technologies and paving materials for bridges, roads, and airstrips for a coldweather region undergoing rapid climate change. Dr. Yusuf Mehta (CEE), the director of CREATES, leads research at the center, along with its associate director, Dr. Ayman Ali. Both have established expertise in pavement design and highway materials research areas. The grant also provides for students to experience hands-on research projects such as studying the use of warm-mix asphalt technology in cold regions.



 The ongoing research includes the development of new technologies and paving materials for bridges, roads and airstrips for a cold weather region undergoing rapid climate change.

SUSTAINABLE PROJECTS | With \$6 million in additional funding, the Rowan University Sustainable Facilities Center (SFC) continues its longtime relationship with the New Jersey Department of Military and Veterans Affairs. The center's work includes energy and water audits, implementing the BUILDER Sustainment Management System, conducting 3D laser scans of building interiors and exteriors, and creating 3D building models using building information modeling software. The center is led by founding director **Dr. Jess Everett** (CEE) and includes three teams of junior and senior clinic students working on building audits and one team each working on the tasks of modeling, maintenance recommendations, and special projects.



LONGER-LASTING ROADWAYS | In an effort to improve New Jersey's infrastructure, the Center for Research & Education in Advanced Transportation Engineering Systems (CREATES) has received a \$1.6M grant from the New Jersey Department of Transportation (NJDOT). The center will act as an academic partner and perform research for innovative materials and technologies assisting in making longer-lasting, more costeffective, and sustainable pavements. CREATES is a leading research center that focuses on eight subject areas: innovative materials, innovative technologies, pavement management system, pavement design procedures, life-cycle cost analyses, pavement policy research, technology transfer, and on-call services. The founders of CREATES include Yusuf Mehta (CEE), the director of CREATES, and Ayman Ali, the associate director of CREATES, who both have established expertise in pavement design and highway materials research areas. → The Henry M. Rowan College of Engineering is at the forefront of innovation. Through strategic network initiatives and entrepreneurial faculty, the college is home to enterprising scientific and business breakthroughs.



MOVING FROM AN IDEA TO AN INNOVATION

In 2021, Rowan University was among the first in the region to join a new, Princeton University-led innovation network called NSF Innovation Corps (I-Corps) Northeast Hub. Funded by a \$15 million award from the National Science Foundation, the Hub provides entrepreneurial training, mentoring, and resources enabling researchers to form startup companies that translate laboratory discoveries into breakthrough products and services.

Rowan is represented in the I-Corps Northeast Hub by Dr. Nidhal Bouaynaya, associate dean for research and graduate studies at the Henry M. Rowan College of Engineering. Bouaynaya co-founded and is the chief technology officer of MRIMath, LLC, a startup company that uses artificial intelligence to improve patient oncology outcomes and treatment response. MRIMath is funded by the National Institutes of Health (NIH) Small Business Innovation Research (SBIR) awards, the Rowan Innovation Venture Fund (RIVF), the New Jersey Commission on Science, Innovation and Technology, the state of Alabama, and angel funding.

Other notable business co-founders from the college include Dr. Mohammad Abedin-Nasab, assistant professor of biomedical engineering, who founded and serves as chief executive officer of Robossis. Robossis is a surgical device used to realign broken bones. The company is funded by an NSF Partnerships for Innovation award and RIVF.

Dr. Mark Byrne, founding dean of Rowan-Virtua School of Translational Biomedical Engineering & Sciences and professor of biomedical and chemical engineering, is co-founder and chief technical officer of OcuMedic, Inc., a drug-delivery company. Numerous government agencies, including the NIH, the NSF, and the U.S. Department of Education, have funded his research.

Provost Anthony Lowman is co-founder and chief technical officer of ReGelTec, Inc., which is developing minimally invasive implants for treatment of degenerative disc disease.





Rowan Engineering innovations are integral to the University's participation in national and regional innovation training networks, NSF Innovation Corps (I-Corps). Among the 12 Rowan teams selected for national NSF I-Corps training grants, 11 were Rowan Engineering teams. Additionally, over two-thirds of Rowan teams selected for NSF I-Corps regional training were Engineering research teams.





TAKING IDEAS TO THE MARKETPLACE

Innovation is at the heart of Rowan Engineering—and every day, faculty, staff, and students develop new technologies in cuttingedge disciplines. From surgical robots to spatially structured light for 3D and artificial reality, Rowan engineers have received numerous patents for their innovations. The Office of Technology Commercialization is responsible for protecting and commercializing these inventions through licenses to industry partners or through the formation of new ventures based on Rowan technologies.



LABORATORY SPACE



ENGINEERING CLINIC LABS

19

LAB SQUARE FOOTAGE

STATE-OF-THE-ART LABORATORIES

The Henry M. Rowan College of Engineering boasts 200,000 square feet of lab space across all six engineering departments, four research centers, and clinic lab space. All six department lab spaces contain cutting-edge lab equipment.

Among the college's labs is the Cold Spray laboratory, featuring a industry-leading VRC Metal Systems Gen IIITM Portable Pressure Cold Spray System, equipped with a six-axis robot configured for mounting and integration with an automated one-axis turntable. Rowan's Machine & Artificial Intelligence Virtual Reality Center, located at the South Jersey Technology Park at Rowan University, is a custom-designed immersive lab with a 7-foot-by-40-foot-wide curved wall of screens and numerous virtual reality and augmented reality head-mounted systems and 3D printers.

Other lab facilities are housed within the College's four research centers — Advanced Materials & Manufacturing Institute (AMMI), Center for Research & Education in Advanced Transportation in Engineering Systems (CREATES), Sustainable Facilities Center, and Machine & Artificial Intelligence Virtual Reality Center (MAVRC) — and Engineering Clinics. These laboratory spaces are available to both undergraduate and graduate students.



PARTITION TYPE





99		3
48	(11-4)	 TOP OF STEEL ELEVATION: ELEVATIONS ARE FOR REFERENCE SEE ROOF FRAMMS PLANS FOR HEIGHT INDICATES UNDERSIDE OF
	+11'-4"	• TOP OF MASONRY / TOP OF PAP

INDICATES					

YPE "A" INDICATES TYP AS PER DWG.

NOTES:

- SEE DWG. A1.04B FOR WALLTYPES
- AND OVERHEAD COLLING DOORS
- SEE DWG. A7.01 & A7.02 FOR TYP. LAB LAYOUT, ELEV
 - SEE DWG. A7.03 FOR BATHROOM ELEVATIONS & DETAILS SEE DWG. A7.08 FOR FLEVATOR DETAILS
- SEE DWG. A2.11a & A2.11b FOR FLOOR PATTERNS











Photo Credit: Ellenzweig

PATHWAYS TO A NEW WORKFORCE

Rowan University participates in 2+2 and 3+1 programs in collaboration with numerous local community colleges. The Henry M. Rowan College of Engineering offers 2+2 programs within the divisions of Engineering Technology, Electrical Engineering Technology, Mechanical Engineering Technology, and Surveying Engineering Technology. Students who earn their associate degree in applied science at local community colleges—such as Rowan College at Burlington County, Rowan College of South Jersey, Cumberland County, and Rowan University of South Jersey, Gloucester County—can pursue a baccalaureate degree through the Division of Engineering Technology.

Aside from partnerships with community colleges, Rowan University offers undergraduate and graduate online programs to trade workers. Rowan's undergraduate construction management and graduate engineering management online programs serve both full-time students as well as working adult learners. Designed for professionals with construction experience and an associate degree or equivalent number of credits, Rowan University's online B.A. in construction management program was created in cooperation with North America's Building Trades Unions (NABTU).





Frank Derby, Ph.D.

Director of Engineering Technology Division

"Engineering technology programs are providing alternate pathways to successful engineering careers through experiential learning, hands-on learning methods, teamwork, and application of technologyoriented solutions to engineering problems."



Alejandro Rodriguez, D.Eng.

Director of Construction & Engineering Management

"We are working closely with the State of New Jersey and the Building Trades unions to create advanced career pathways for building trades apprentices. At Rowan University, our goal is to provide all building trades professionals with the skills necessary to excel in the construction industry."

READYING A WIND ENERGY WORKFORCE

Rowan University was awarded a federal workforce training grant that will be used to prepare students for New Jersey's burgeoning wind power industry. Rowan University will offer new job pathways in partnership with Rowan College of South Jersey, allowing students to earn a bachelor's degree for less money than a traditional four-year program. The Henry M. Rowan College of Engineering will use the grant to develop specialized wind energy certificates for students enrolled in 2+2 engineering technology degree programs.

Students from the Henry M. Rowan College of Engineering stand with Rep. Donald Norcross, Rowan University President Ali A. Houshmand, and Gloucester County Commissioner-Director Frank J. DiMarco

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 four-year program.

INDUSTRY PARTNERSHIPS



PARTNERING WITH INDUSTRY LEADERS

As a part of the University's focus on applied research, engineering students, researchers, and faculty partner with businesses and industries based in New Jersey and beyond. Rowan University has collaborated with more than 200 companies, including Ørsted, PPG, Arkema, Robossis, Cargill, and Asphalt Pavement Systems.

Undergraduate engineering students across all departments have opportunities to contribute to research for such industry partnerships through engineering clinics. Every engineering student at Rowan University enrolls in a clinic project during each semester of their tenure, working side by side on laboratory experiments, design projects, and research.

The Electrical & Computer Engineering (ECE) and Mechanical Engineering (ME) departments offer a co-op program with Lockheed Martin, a corporation working in the aerospace, arms, defense, information security, and technology sectors. This optional co-op experience allows students to obtain a more concentrated and real-world experience, typically over a six-month period or longer. The co-op program typically begins during the summer between a student's junior and senior years and requires students to take the four courses that constitute the Certificate of Undergraduate Studies in Combat Systems Engineering, also in partnership with Lockheed Martin. The certificate program is most closely aligned with electrical and computer engineering topics but is open to any engineering student. ECE and ME students participating in the Lockheed Martin co-op take the same courses required for the Combat Systems Certificate of Undergraduate Studies.

Inolex





The castor plant (top image) is naturally drought resistant and naturally resistant to most pests. It produces moderate land yields of about 350-1200 kg oil/ha/yr. While not competing with food crops, this plant thrives in a wide variety of environments. Castor is a versatile feedstock and is used for many Inolex ingredients.

The genus Brassica (bottom image) includes many nutrient rich plants such as broccoli, cabbage, and kale. Within that genus, Brassica napus (rapeseed) is widely used in nolex innovations due to the exciting performance benefits it yields and the inherently sustainable profile of the plant.

INOLEX & ROWAN PARTNER TO DEVELOP PLANET-FRIENDLY MATERIALS

Henry M. Rowan College of Engineering has entered into a multi-year industry partnership with Inolex, a Philadelphia-based company that focuses on sustainable specialty ingredients within the global beauty and personal care industry. Lead investigators representing Rowan University are **Dr. Joseph Stanzione**, director of Advanced Materials & Manufacturing Institute (AMMI), Dr. Giuseppe Palmese, dean of the College of Engineering, and **Dr. Mark Byrne**, the founding dean, Rowan-Virtua School of Translational Biomedical Engineering & Sciences. Rowan Engineering researchers are working with Inolex to understand the company's polymer chemistries and to collaborate on the development of sustainable, renewable, bio-based, and recyclable polymers. This will involve synthesis and polymer materials characterization. Research and development work at Inolex focuses on new technologies founded on renewable bio-based feedstocks. Past efforts by Rowan Engineering and AMMI to develop polymeric materials from renewable sources align with Inolex's principles of green chemistry.

THOUGHTFULLY FOCUSED-FROM SMARTER MATERIALS TO ARTIFICIAL INTELLIGENCE

The Henry M. Rowan College of Engineering boasts four research centers: Advanced Materials & Manufacturing Institute (AMMI), Center for Research & Education in Advanced Transportation in Engineering Systems (CREATES), Sustainable Facilities Center, and Machine & Artificial Intelligence Virtual Reality Center (MAVRC). Within each center, faculty, staff, and postdoctoral fellows work alongside graduate and undergraduate students to further the college's hands-on, minds-on approach to engineering education.





Advanced Materials & Manufacturing Institute (AMMI)

Combining applied science, engineering, and manufacturing technologies with sustainability, Rowan's Advanced Materials & Manufacturing Institute (AMMI) works to enhance materials performance, responsibly. Led by founding director Dr. Joe Stanzione (CHE), the institute has four strategic technical initiatives: advanced composites, optics/photonics, batteries, and sustainability. These categories are aligned with the greatest challenges the state and the nation face, from food and water, to energy, to education, to national security. To solve these challenges, AMMI is partnering with 16 industry leaders (including PPG Industries, Inolex, and Cardolite Corporation), federal agencies (such as the Department of Defense, National Science Foundation, Department of Agriculture, and Environmental Protection Agency), state authorities, community colleges, and nonprofits.

AMMI's facilities are located at Rowan's South Jersey Technology Park in the Samuel H. Jones Innovation Center. AMMI's offices and state-of-the-art labs comprise 4,000 square feet of space and include the Optics/Photonics Lab, Characterization Lab, Synthesis Lab, Composites Lab, the 3D Printing Lab, shared with Rowan's Machine & Artificial Intelligence Virtual Reality Center, and the Mechanical Testing Lab, shared with Rowan's CREATES. In Rowan Hall, the institute's Cold Spray Facility offers a unique approach to additive manufacturing, allowing for the fabrication and repair of free-standing parts, application of complex coatings, and the construction of features on existing components in the field, at a depot, or in a factory. AMMI also shares collaborative facilities with the Department of Physics & Astronomy in Science Hall and with the Mechanical Engineering and Chemical Engineering departments in Rowan Hall.



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

The Center for Research & Education in Advanced Transportation Engineering Systems (CREATES) is a comprehensive transportation research center. Led by founding director Dr. Yusuf Mehta (CEE), the center conducts cutting-edge research in many areas, including additive manufacturing, bituminous and cementitious materials, sustainable construction materials, soils and geotechnical engineering, bridge engineering, intelligent transportation systems, pavements, and transportation safety and mobility.

Since 2016, CREATES has received nearly \$40 million in research funding, with more than 50% from federal agencies, such as the Department of Transportation - Federal Highway Administration, Federal Aviation Administration, and the Department of Defense. CREATES has also been a resource for the New Jersey Department of Transportation (NJDOT) as part of its Pavement Support Program. In addition, CREATES received its largest Department of Defense grant of \$5.2 million to develop innovative construction materials for cold regions.

The center also recently compiled a detailed study of distracted driving in New Jersey, research funded by the National Highway Traffic Safety Administration (NHTSA) under the direction of the New Jersey Division of Highway Traffic Safety. The research provides insight into the causes and extent of distracted driving in the state of New Jersey.

CREATES has launched a strong education and workforce development program to prepare future transportation leaders. One initiative, the Department of Education Graduate Assistance in Areas of National Need (GAANN) grant, funded 13 doctoral students from underrepresented minority groups in the area of infrastructure, safety, and congestion. Another program, supported by the Federal Highway Administration (FHWA), funds a two-week residential National Summer Transportation Institute. The institute attracts a large cohort of high school students from underrepresented minority groups and lower socioeconomic backgrounds engaging them in all aspects of transportation engineering.

 \rightarrow The Department of Education Graduate Assistance in Areas of National Need (GAANN) grant funded 13 doctoral students from underrepresented minority groups in the area of infrastructure, safety, and congestion

CREATES has several state-of-the-art research laboratories, including an accelerated pavement testing facility that hosts the Heavy Vehicle Simulator. Rowan University is the only academic institution in the Northeast with equipment capable of testing 20 years of traffic on pavement sections in only a couple of months.



Machine & Artificial Intelligence Virtual Reality Center (MAVRC)

The Machine & Artificial Intelligence Virtual Reality Center (MAVRC) at Rowan University pursues convergence research in machine and artificial intelligence (AI) and virtual, augmented, mixed, and extended reality (VR/AR/MR/XR). VR uses technology to immerse users in simulated environments, while AI can learn from the environment to make decisions with the keen insight and perception of a responsive being. The convergence of VR and AI can bring unique research and business opportunities. For instance, VR and AI can be brought together to advance situational awareness of display technologies, increase the safety and productivity of process manufacturing, extend the abilities of surgeons in the operating room, and enhance the shopping experience.

Led by Dr. Nidhal Bouaynaya, the center also engages in education and workforce development, infrastructure improvement, and the public-private innovation ecosystem through synergistic collaboration with diverse stakeholders. Located at the Joint Health Sciences Center in Camden, New Jersey, and the South Jersey Tech Park in Mantua, New Jersey, the center offers a one-of-a-kind collaborative environment, built to support cutting-edge research by the University's faculty and students for community, nonprofit, government, and corporate clients.







In 2021, the SFC received a six-year, \$6 million increase in funding from its longtime partner, the New Jersey Department of Military and Veterans Affairs (NJDMAVA). In addition, the center welcomed two new professors, **Dr. Adriana Trias** (CEE) and **Dr. Jie Li** (ECE), and three new graduate students. Undergraduate junior and senior students work on SFC projects through the Engineering Clinic program. Dr. Everett was also honored with Rowan's 2022 Faculty Research Achievement Award, granted to full-time faculty for their achievements in research.

The lab is located in Rowan Hall and is equipped with technology needed to conduct building energy and water audits, create and display building information models, produce solar and wind assessments, sustainably manage facilities, and work on energy outreach and planning.

Sustainable Facilities Center

As the University—and the world—moves to lessen its environmental footprint, the Sustainable Facilities Center (SFC) helps public and private entities sustainably manage facilities by reducing the environmental, economic, and social impacts of buildings. Founded in 2018 by Dr. Jess Everett (CEE and ExEED), the center performs building energy and water audits, implements the BUILDER Sustainment Management System, conducts 3D laser scans of building interiors and exteriors, creates 3D building models using building information modeling software, and performs solar and wind assessments.

REAL-WORLD, HANDS-ON ENGINEERING

ENGINEERING CLINIC PROGRAM

A defining feature of Rowan's engineering curriculum is the Engineering Clinic program. In every semester during a Rowan engineering major's undergraduate tenure, students are enrolled in an engineering clinic, a course pairing classroom concepts with real-world, hands-on applications. Since the engineering program's founding in 1996, clinics have remained central to the college's approach to educating the next generation of engineers.

From the first semester, clinics place students of every engineering discipline in professional environments, working alongside their classmates, faculty, and graduate students on laboratory and design projects. First-year and sophomore-year clinics introduce students to the necessary technical, managerial, and communicative skills for a career in engineering. Writing arts composition and public-speaking courses are baked into the clinic program. The sophomore-year clinic is focused on communication, learning how to write reports, and present findings orally.

By junior year, undergraduates work with faculty on client-based projects. At the start of each semester during their junior and senior years, students choose from more than 100 clinic projects and rank which they'd like to work on. They are matched with project teams based on interest and availability. Projects range from designing an adjustable powered wheelchair for children to developing augmented reality displays for helicopters. Each research team is an interdisciplinary group.

Clinics expose students to real-world projects and clients from the start of their undergraduate careers, offering the best of an internship or research position without needing to leave campus. Many local and national organizations, government agencies, and businesses partner with Rowan University to fund and support research projects in clinic courses, from the Department of Defense to Children's Hospital of Philadelphia and Siemens.



For the first time since losing his right leg during a 2004 mission in Iraq, Army veteran Hilbert Caesar can ride a mountain bike outside, due to the hard work of six students led by Dr. Erik Brewer, senior lecturer and Chair of Innovation in the Department of Biomedical Engineering at the Henry M. Rowan College of Engineering and Quality of Life Plus.



JOIN THE CLUB

The Henry M. Rowan College of Engineering has 21 student organizations focusing on engineering disciplines across all specialties and interests. Students can volunteer their time augmenting their studies outside the classroom with fun, hands-on programming.

Among the many clubs is the Society of Automotive Engineers, where two female students excelled in a typically male-dominated field. Senior **Samantha Midili** (ME) and junior **Bianca Jeremiah** (ME) sat on the club's executive board and helped research, design, and manufacture functioning cars. The club competed in a global competition in Rochester, N.Y., where they competed against other colleges on various aspects of their manufactured car: acceleration, suspension, maneuverability, endurance, and more.

The club's hands-on structure gives students a real-world experience, bringing concepts from research and design to manufacture and implementation.

"Being a mechanical engineer means designing to manufacture," Jeremiah said. "At Rowan, you get to go through the entire process of research, design, and implementation-just like in the industry." Engineering students Ashleigh Jankowski (left) of Catonsville, Maryland, and Isabella Marshall of Highland Park, Middlesex County, have earned the 2022 Goldwater Scholarship.

STUDENT FELLOWSHIPS

Two engineering students earned the 2022 Goldwater Scholarship. **Ashleigh Jankowski** (BME) and **Isabella Marshall** (ECE and Mathematics), both seniors, received the award, which recognizes students who intend to pursue a Ph.D. degree and who possess high leadership potential in the future. The scholarship awards students up to \$7,500 per year in funding.

Both students are pursuing the Thomas N. Bantivoglio Honors Concentration in the John H. Martinson Honors College. Jankowski serves as president of the Rowan student chapter of the Biomedical Engineering Society and as service chair for the Rowan student chapter of the Society of Women Engineers. Marshall interned at the Princeton Plasma Physics Laboratory and at the Boyce Thompson Institute at Cornell University.

2018-2022



FULBRIGHT Scholars

NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWS













PLANTING SEEDS FOR CAREERS IN STEM

Dr. Kauser Jahan (CEE) and **Dr. Jeong Eun Ahn** (CEE) hosted a two-week workshop in July 2022 to introduce high school students to careers in water and wastewater utilities through the Waterworks program. Funded through a \$500,000 U.S. Environmental Protection Agency grant, the primary goal of the project is to foster awareness about employment opportunities in the drinking water and wastewater utilities workforce via educational programming. Rowan University is developing, piloting, and implementing both hands-on and virtual educational activities to inform students and educators about STEM activities within the operations of a water and wastewater plant.

- In April, Pennsauken Middle School STEAM Tank teams presented their innovative STEAM projects for feedback from Rowan engineering students and professors. Using input from the college, the middle school teams were able to improve their projects ahead of their presentation at the National School Boards Association STEAM Tank Theater.
- Engineering students and professors welcomed the Greater Philadelphia and Southern New Jersey chapter of Girls Inc., a nonprofit supporting and empowering girls, for a Day of Engineering in May.
- Through Rowan's Attracting Women into Engineering (AWE) program, nearly 100 middleschool aged girls visited Rowan's campus in July for hands-on projects and demonstrations. Participants were introduced to various engineering disciplines and careers and were able to connect with like minded peers, current engineering undergraduates, Ph.D. candidates, faculty, and advisers.
- Since 2007, Rowan's Introduction for Students to Engineering (RISE) program has offered high school students an in-depth view of engineering. This summer, 40 students were introduced to various engineering disciplines and careers. Students were able to connect with current engineering undergraduates, Ph.D. candidates, faculty, and mentors.

→ For the second summer, the RISE Jr. program was offered to nearly two dozen fourth- and fifth-grade students. Similar in scope to the RISE summer program, undergraduate engineering students provided an active mentorship role to participants.

CHAMP Saturdays provided sixth through 12th grade Camden City students with hands-on activities in Rowan Hall. Offered in conjunction with the Creating Higher Aspiration and Motivation Project (CHAMP)/GEAR Up Program, CHAMP Saturdays are designed to introduce students to the college environment and engage them in fun STEM projects that portray basic engineering principles.

Over the last year, the Society of Women Engineers: Engineers in Training (SWEET) held nine workshops for over 100 middle schoolaged participants. Workshops are coordinated and led by Rowan University's student chapter of the Society of Women Engineers.



The Rowan Gift. driven by Henry's vision for the future of engineering, has shaped the minds of students and impacted the industry for generations to come.

HENRY M. ROWAN WAS NEVER SATISFIED WITH THE STATUS QUO

Throughout his life, the storied engineer and philanthropist was dedicated to progress and entrepreneurship. Thanks to these ideals, Rowan and his wife, Betty, transformed higher education in South Jersey with a \$100 million gift given in 1992 to then-Glassboro State College, an unprecedented donation to a public institution.

Born on Dec. 4, 1923—the same year the university was founded—Henry Rowan was a natural entrepreneur, raising chickens and selling eggs at the age of 9. His sole customer was his mother.

While enrolled in a dual degree program at Williams College in Massachusetts for a Bachelor of Arts degree and the Massachusetts Institute of Technology (MIT) for a Master of Science degree, Rowan enlisted in the Army Air Corps during World War II. Rowan married his childhood sweetheart, Betty Long, while in flight school. After the war, Rowan completed his schooling at MIT.

Ever the inventor and entrepreneur, Henry built his first furnace with Betty in the basement of their Ewing Township home in 1953. That same year, Rowan founded Inductotherm Corp., a Rancocasbased company that designs and manufactures advanced induction melting, heating, holding, and pouring systems for metal and material processing. The company's first order—a 60-pound beryllium copper furnace—was built in the Rowans' garage. Inductotherm would eventually grow to encompass 80 subsidiaries throughout North America, South America, Europe, India, Asia, and Australia.



world professional situations, working on industry projects through the Engineering Clinic program.

The school welcomed its first class in 1996 and the first engineering class graduated in 2000. Since then, thousands of students have graduated from the college, majoring in biomedical, chemical, civil and environmental, electrical and computer, mechanical engineering, experiential engineering education, and engineering entrepreneurship degree programs, in addition to master's and doctoral programs. The college's presence has expanded beyond Engineering Hall and Rowan Hall, which both include state-of-the-art laboratory space. Additional research space is maintained at the South Jersey Technology Park in Mantua and the Joint Health Sciences Center in Camden.

Since 2013, the college has doubled both student enrollment and full-time faculty. More than 230 partnerships support experiential engineering education opportunities, including an exclusive four-year cooperative education program with Lockheed Martin in combat systems engineering.

The Rowan Gift, driven by Henry's vision for the future of engineering, has shaped the minds of students and impacted the industry for generations to come.





A VISION THAT SHAPES THE FUTURE



On June 16, 2022, former and current faculty, staff, founding chairs, alumni, and industry partners of the Henry M. Rowan College of Engineering gathered to celebrate the college's 25th anniversary and the ongoing legacy of the college's benefactor and namesake, Henry M. Rowan. The gala marked a quarter century of academic achievement in engineering since the college first opened its doors in 1996.

Rowan's vision for the college has shaped the past, present, and future of academics. From its "hands-on, minds-on" approach to learning, to its push for R1 designation, the college reflects his ethos of growth and progress, one that resonated throughout the celebration. Held in Rowan and Engineering halls, the event featured remarks from Rowan University President A A. Houshmand, Dean Giuseppe Palmese, chair of the Engineering Alumni Advisory Council, Jeffrey Miles, and the daughter of Henry and Betty Rowan, Virginia Rowan Smith, a member of the Rowan University Board of Trustees.

Other notable attendees included Dr. John Schmalze founding chair of the Department of Electrical & Computer Engineering; Dr. Stephanie Farrell; foundin department head of Experiential Engineering Education Department; and Dr. Ratneshwar Jha, hea of the Department of Mechanical Engineering.

The evening began with a reception in the Rowan Hall lobby, where a display of Rowan Engineering memorabil chronicled the last 25 years through newspaper articles brochures, and apparel. Guests could also view the 2010 Engineering Hall blueprint renderings.





	The story of Henry M. Rowan was also on view,
li	highlighting items from his life, including
	his personal slide rule from his days at the
	Massachusetts Institute of Technology, a Rubik's
1	Cube — Rowan was known to challenge others to
	beat him at the puzzle—and a World War II Army
	Air Corps uniform. One of Rowan's demonstration
	induction furnaces was displayed, alongside a white
21,	paper for the machine. The artifacts are among
	thousands of items and documents donated by the
ng	Rowan family, which will be a part of a larger exhibit
d	of his life, expected in 2023.
	Following a sit-down dinner, guests were treated
	to a drone show from the balcony and classrooms
	in Engineering Hall. Orchestrated by Verge Aero, a
lia	Rowan alumni-owned company, illuminated drones
5,	lit up the night sky, depicting images like a flask and
0	beaker, wind turbines, gears, and the University logo.

ALUMNI SPOTLIGHT



"Rowan was the foundation for the career success that I have been blessed to have. I learned engineering principles but, more importantly, what it takes to execute an idea and how to engineer in the real world."

CATHERINE NI, BS '00 (ME)

In 1996, Catherine "Cat" Ni was among the first students to embark on Henry M. Rowan's vision for the next generation of engineers. Four years later, she graduated with a bachelor's degree in mechanical engineering "from an engineering program that was changing the face of education," Ni said.

Ni is the director of Close Combat Systems at Lockheed Martin in Orlando, Florida, where she focuses on the production of multiple missile systems supporting the United States Navy, Air Force, and Army. This includes Javelin, a key system used in Ukraine. During her 22-year tenure at the company, Ni has devoted her efforts toward inclusion, as the executive sponsor for the Lockheed Martin PRIDE Business Resource Group. She is also a graduate of Lockheed Martin's Operations Leadership Development Program.

After graduating from Rowan, Ni earned her Master of Science degree in engineering management from Drexel University. She received the Rowan College of Engineering Alumni Award in 2014, was featured in the Rowan Magazine special "Rowan 40 under 40" feature in 2016, and was honored with a Distinguished Alumna Award during Rowan University's 2020 Commencement.

While a student at Rowan, Ni was a member of Alpha Sigma Alpha sorority, served with the Student Government Association, and helped found the Society of Women Engineers student chapter at Rowan.

"Rowan was the foundation for the career success that I have been blessed to have," Ni said. "I learned engineering principles but, more importantly, what it takes to execute an idea and how to engineer in the real world."



Dr. Dimah Dera is a tenure-track assistant professor in the Department of Electrical and Computer Engineering at The University of Texas Rio Grande Valley (UTRGV), and the Fred W. and Frances H. Rusteberg Endowed Fellow at UTRGV.

In 2022, Dera was awarded an NSF grant for "TRUST-TRustworthy Uncertainty Propagation for Sequential Time-Series Analysis." The project will develop trustworthy machine learning algorithms for sequential data, such as financial transactions and physiological signals, that are able to quantify their uncertainty, self-assess their prediction performance, and even detect adversarial attacks from malicious users. Dera was the first Ph.D. student to graduate from the Department of Electrical and Computer Engineering in spring 2020. She also served as a post-doctoral researcher in the Department of Electrical & Computer Engineering at the Rowan Artificial Intelligence Lab (RAIL).



DIMAH DERA, PH.D. '20 (ECE)

DONATIONS

A LEGACY OF GIVING

Rowan Engineering opened its doors to students in 1996 and has been providing a "hands-on, minds-on" engineering education ever since. Continuing the legacy of our dear friend and benefactor, Mr. Henry Rowan, the college has graduated thousands of engineers who continue to excel in industry, academic institutions, and beyond. Inspiring "great engineers" was Mr. Rowan's goal, and we proudly strive to do this every day.

Since then, Henry M. Rowan College of Engineering has relied on alumni, faculty, staff, Rowan parents and friends to sustain our founder's vision, support our students and programs, and take the college in a dynamic new direction.



DONATION BREAKDOWN

TOTAL	\$2,304,380
Other	\$2,500
Endowed Student Financial Aid	\$92,815
Endowed Academic Divisions	\$1,000,000
Student Financial Aid	\$53,000
Academic Divisions	\$1,156,065





LEADERSHIP

Giuseppe R. Palmese, Ph.D. Dean

Steven Chin, Ph.D. P.E. *Vice Dean*

Nidhal C. Bouaynaya, Ph.D. Associate Dean for Research & Graduate Studies

Jenn Bing Assistant Dean for Strategic Initiatives

DEPARTMENT HEADS

Stephanie Farrell, Ph.D. *Experiential Engineering Education*

Kauser Jahan, Ph.D. P.E. Civil & Environmental Engineering

Ratan Jha, Ph.D. Mechanical Engineering

Kenneth Lau, Ph.D. Chemical Engineering

Robi Polikar, Ph.D. *Electrical & Computer Engineering*

Mary Staehle, Ph.D. Biomedical Engineering

DIVISION DIRECTORS

Frank Derby, Ph.D. Engineering Technology

Alejandro Rodriguez, D.Eng. Construction & Engineering Management





