since its birth in the early 1980s, modern nanotechnology has seen rapid research growth worldwide, including here at Villanova University. Defined as the study and application of matter on an atomic, molecular and supramolecular scale, this burgeoning technology already has begun to have an impact on our lives. Its potential use across nearly all disciplines of science, engineering and technology is evidenced by recent breakthroughs reported in academic journals around the world:

• Nanosensors that detect heart attacks before they happen
• Nanomaterials to improve protection of soldiers
• Carbon nanotube membranes for purifying sea water
• Gold nanoshells and lasers to destroy cancer tumors with heat
• Silver nanoparticles to kill bacteria

In the College of Engineering, Mechanical, Chemical, Electrical and Computer Engineering faculty are pursuing a variety of related applications, and have received a number of national research grants to support their work:

• $324,709 from the National Science Foundation (NSF) for “Thermal Transport in Nanomembrane Phase Change Materials” (2009–2013)
• A $60,000 one-year grant from the Nanotechnology Institute for the study of low-temperature mechanical reinforcement of nanoparticle thin films (2011)

NSF Grant Supports Cutting Edge Technology

In fall 2014, a team of Villanova Mechanical Engineering faculty earned the College’s most significant nanotechnology award to date: A $412,106 Major Research Instrumentation grant from the NSF for “The Acquisition of Atomic Layer Deposition Device for Nanoscale Materials Development Research.”

Put in simplest terms, the atomic layer deposition device creates a thermal or plasma thin film material with atomic precision, enabling critical new research areas. Under the direction of Professor Amy Fleischer, PhD, ’91 ME, ’96 MSME, the Villanova Atomic Layer Deposition facility will be established in the Center for Engineering Education and Research (CEER). The new device will join the College’s existing nanotechnology instrumentation in the Nano-Bio-Mechanical Characterization Laboratory directed by Associate Professor of Mechanical Engineering Gang Feng, PhD, and the Nanomaterials and Surface Science Laboratory led by Randy Weinstein, PhD, Associate Dean of Academic Affairs and professor of Chemical Engineering.

Working with Dr. Fleischer on this project are Mechanical Engineering colleagues Dr. Feng and Calvin Li, PhD, assistant professor. The project also involves Daeyeon Lee, PhD, a Chemical Engineering professor from the University of Pennsylvania, and Xuemet Cheng, PhD, a Bryn Mawr College Physics professor. “This facility will serve as a regional center, enabling collaborative research and development between faculty and student researchers in three different areas of expertise, and at three distinct types of institutions,” says Dr. Fleischer. Gary A. Gabriele, PhD, Drosdick Endowed Dean of the College of Engineering, adds, “This latest award places Villanova in the ranks of research institutions nationwide that are on the cutting edge of this emerging technology.”

“Having the latest instrumentation for nanotechnology research is practically a requirement for bringing the best faculty on board, which is what we must do to stay competitive as we transition into a doctoral/research university classification.”

—Gary A. Gabriele, PhD, Drosdick Endowed Dean, College of Engineering

Current Nanotechnology Research

Examples of nanotechnology research currently being conducted at the University include Dr. Feng’s and Daeyeon’s layer-by-layer assembly process to fabricate multifunctional nanostructured thin films for optical use. Their goal is to make ultrathin films more robust and scratch resistant for use as anti-fogging and anti-reflection coatings commonly applied to eyeglasses. Dr. Feng also is working on characterizing individual nanomaterials (nanowires, nanotubes, nanoshells and nanoparticles) so they can be accurately and quickly evaluated for designing high performance nano-systems. In addition, he is pursuing nanomechanical characterization and modeling of hard tissues to develop target-specific therapeutic treatments that may alter bone microstructure to prevent fracture. Associate Professor of Mechanical Engineering Ani Ural, PhD, also is looking at fracture behavior as related to the structure, distribution and material properties of micro- and nanostructural-components of bone.

Dr. Fleischer’s and Li’s research is focused on nano-enhanced phase change materials for advanced energy systems. A few of Dr. Fleischer’s specific projects include the effect of graphene folding on thermal conduction in nanocomposites, viscosity of nano-enhanced energy storage materials and heat flow at nanoparticle interfaces. Dr. Li is working on nano to centimeter multiscale hierarchal structures for two-phase change heat transfer and nano-enabled thermomagnetic energy conversion.

Also in the Department of Mechanical Engineering, Professor Sridhar Santhanam, PhD, Associate Professor Kei-Pen Jia, PhD, and Professor and Department Chair C. Nataraj, PhD, are researching nanostructured ceramics to enhance manufacturing technologies. Nanostructured ceramics offer the possibility of enhanced strength and toughness which make them excellent candidates for a variety of applications.

The following Villanova Engineering faculty also are conducting nanotechnology research:

Michael A. Smith, PhD, ’99 MSCHE, associate professor, Chemical Engineering
• Effects of self-assembled nanostructured silica surface roughness on the behavior of vanadium oxide

Randy Weinstein, PhD, Associate Dean of Academic Affairs and professor, Chemical Engineering
• Use of graphite nanofibers as catalysts for chemical reactions
• Creation of self-assembled monolayers (layers that are one molecule thick) for the lubrication of small devices and use as corrosion inhibitors

Aaron Wemhoff, PhD, associate professor, Mechanical Engineering
• Development and application of molecular dynamics modeling toward analysis of nanosystems

Noelle Comoll, PhD, associate professor, Chemical Engineering
• Development of customizable tumor-targeting nanoparticles

Considering the relative infancy of the field and the progress already being made, the possibilities presented by nanotechnology are limitless. Dr. Feng says, “Our fundamental understanding of the relationship between the nanostructure and the functional behaviors of nanomaterials will ultimately enable us to design and fabricate multifunctional nanomaterials for a variety of advanced applications, from energy conversion and storage to water purification and biomedical applications—uses that impact our everyday lives.”
Jacob Elmer, PhD, assistant professor, Chemical Engineering, was awarded a three-year $1.5 million grant from the National Science Foundation (NSF) for his research on “Temperature- and Radiation-Responsive Polymers.” Elmer’s research focuses on developing polymers that change their properties in response to changes in temperature or radiation, which could have applications in drug delivery, imaging, and other fields.

The NSF granted Ani Ural, PhD, associate professor, Mechanical Engineering, $154,293 for her research on “The Role of Interstitial Lymphocytes in Bone Mineral Composition, Organization and Function.” This goal is to better understand the influence of osteoporosis treatments on bone quality and to determine the possible effects of atypical femoral fractures.

In January 2015, the Kern Family Foundation recognized the College of Engineering’s achievements in the Kern Entrepreneurial Engineering Network (KEEN) by presenting Drosdick Endowed Dean Gary A. Gabriele, PhD, and Edmond Dougherty ’69 EE, ’86 MSCS, with the 2014 Dean’s Award. Drosdick has supported the College’s strategic use of the inverted classroom model also is supported by leveraging the opportunities generated by our graduate programs, research centers and teacher-scholar faculty.

These articles point to every aspect of Villanova Engineering, from our leading faculty researchers in materials properties and engineering education, research centers and teacher-scholar faculty.

The NSF has awarded the College of Engineering $7 million to support faculty research in a variety of areas, including nanotechnology, engineering faculty are conducting research in a variety of other fields. The following were awarded research grants this academic year:

- $224,000 for a two-year study of “Stochastic Knock Analysis and Control” by Chris Townend, lab manager, Chris Townend oversees daily operations of Mechanical Engineering labs and the machine shop.

Who do you know? Meet college of engineering staff

Lab manager, Chris Townend oversees daily operations of Mechanical Engineering labs and the machine shop.

Q: What specific responsibilities do you have as lab manager?
A1: I am involved in materials properties and thermal-fluids testing, and mechanical design and fabrication. I also configure and calibrate advanced data acquisition systems and sensors.

Q: How long have you been in this role?
A1: I came to Villanova in engineering in 1986 after I earned my Bachelor’s degree in Engineering at Temple University.

Q: What’s your favorite thing about your work?
A1: I really enjoy mentoring and guiding students in their work. It’s especially exciting to assist researchers with complex experimental problems.

Q: Could you offer students one piece of advice, what would it be?
A2: Don’t wait too long to return to school if you’re contemplating earning a graduate degree. If you wait a decade like I did it’s hard getting back in the groove. You forget a lot of math over those 10 years.

Q: What are your hobbies and interests?
A3: I’m into fishing, camping and hiking. Anything outdoors.

Q: What would people be surprised to know about you?
A4: When I was elementary school age I lived in France for a couple years. I actually learned to drive on the Peugeot 406 that we brought them and brought back to the U.S. with us.

Can you tell us about your family?
A5: I live in Meda, PA with my wife, Joanna. (We CON. I have two lovely daughters—Alyssa, 16, and Elle, 9. We have a captive cat named Pumpkin and Martha’s dog, the beagle.

Chris offers valuable expertise in making things work, whether it is in senior design projects or research experiments. The department’s success in these areas would not be possible without his help.”

Gary A. Gabriele, PhD
Drosdick Endowed Dean
College of Engineering

STRATEGIC PARTNER SPOTLIGHT: HARRIS CORPORATION

Engineering education, research and service rely on the partnerships the College of Engineering forms with corporations, foundations, and other entities. Harris Corporation, led by Chairman, President and Chief Executive Officer William M. (Bill) Brown ’84 ME, ’97 MSEE, a member of the Engineering Advisory Board, is one example of the College’s multifaceted relationships.

A leading global provider of communications and information technology products, software and systems, Harris’ 13,000 employees are “dedicated to delivering communications” for governmental and commercial customers in more than 125 countries. During the course of its 120-year history, engineering and innovation have been the core drivers of the company’s success, which makes Harris an ideal strategic partner for the College.

Through the past two years, Harris has supported the ongoing professional development of Villanova engineering students, including recruitment for summer internships and entry-level positions, career sessions and networking events and support for the Society of Women Engineers and the National Society of Black Engineers. More recently, Harris has contributed significant time and resources to engage our students in the “professional practice” of engineering through engineering design projects.

WARD LECTURE PROVIDES INSIDE LOOK ON WIRELESS TECHNOLOGY


An Executive Vice President and Chief Technology Officer of Verizon Communications, Malone is responsible for the company’s technology roadmap, including overall platforms integrity and architecture, network strategy and product development. He also manages Verizon’s overall network engineering and operations functions. Given his vast experience, Malone’s lecture provided an insider’s perspective on the world of wireless technology and how technology has transformed the way we communicate and access information. By exploring the exciting possibilities that he led in an uncharted world, Malone took questions from students and faculty on topics ranging from signal interference and the need for lightning, the ability to eavesdrop, and which degrees or minors should be pursued to get hired in this sector.

On campus, Malone also spoke to a select group of electrical and Computer Engineering undergraduates and graduate students, offering industry insights, educational accomplishments and career guidance. Karen Novik 16 EEE was intrigued to learn more about the Federal Communications Commission’s wired auctions. “I didn’t realize that those companies actually buy virtual spectrum,” she says. Luke Keene 16 EEE, appreciated hearing, “there is no right career path for everyone, just the best for you.”

Since earning his bachelors degree in electrical engineering in 1982, Malone has remained involved with the life of the College. He served as a member of the Engineering Advisory Board, provided advice to the Nicaragua Nova Mobile Health project, and was instrumental in bringing Verizon on board as a member of Villanova Center for Energy Smart Stewardship. His goal is to help students pursue engineering education.

Senior Capstone Design Collaborations Harris’ Government Communications segment is sponsoring a two-year capstone design project that will involve students from Mechanical Engineering and Electrical Engineering with the goal to design an underwater vehicle that employs technologies to create a 5-D map of the seabed.

The company’s RF Communications segment is sponsoring a one-year design project for a team of Electrical and Computer Engineers. The team is tasked with modifying a commercial off-the-shelf quad-rotor helicopter with advanced image and digital signal processing technology to identify and track specific ground-based objects to display the automatic-Wright Right path, allowing it to fly autonomously.

Villanova Summer Innovation Incubator (VII) The Harris Foundation awarded the Colleges of Engineering and Law with a $250,000 grant to create the Villanova Summer Innovation Incubator (VII), a new initiative for summer 2015.

Four multidisciplinary engineering student teams have been competitively selected to participate in the two-month, campus-based accelerator program for which they will receive expanded project budget and the time and space to develop proof of concept prototypes of their own design. That means putting all the tools and technologies needed for that to happen. The project is focused around creating an entrepreneurial team that will be able to apply for grants and attract investments to a startup.

How would people be surprised to know about you?
A6: First University Innovation Fellow,” that evening.

Can you tell us about your family?
A7: My wife is a multi-talented engineer and grandmother, and my daughter is a student at the University.

What’s your favorite thing about your work?
A8: I love working on complex experimental problems.

E verything we do at Harris’ Government Communications segment is sponsored by a two-year capstone design project that will involve students from Mechanical Engineering and Electrical Engineering with the goal to design an underwater vehicle that employs technologies to create a 5-D map of the seabed.

The company’s RF Communications segment is sponsoring a one-year design project for a team of Electrical and Computer Engineers. The team is tasked with modifying a commercial off-the-shelf quad-rotor helicopter with advanced image and digital signal processing technology to identify and track specific ground-based objects to display the automatic-Wright Right path, allowing it to fly autonomously.

Villanova Summer Innovation Incubator (VII) The Harris Foundation awarded the Colleges of Engineering and Law with a $250,000 grant to create the Villanova Summer Innovation Incubator (VII), a new initiative for summer 2015.

Four multidisciplinary engineering student teams have been competitively selected to participate in the two-month, campus-based accelerator program for which they will receive expanded project budget and the time and space to develop proof of concept prototypes of their own design. That means putting all the tools and technologies needed for that to happen. The project is focused around creating an entrepreneurial team that will be able to apply for grants and attract investments to a startup.

How would people be surprised to know about you?
A6: First University Innovation Fellow,” that evening.

Can you tell us about your family?
A7: My wife is a multi-talented engineer and grandmother, and my daughter is a student at the University.

What’s your favorite thing about your work?
A8: I love working on complex experimental problems.

E verything we do at Harris’ Government Communications segment is sponsored by a two-year capstone design project that will involve students from Mechanical Engineering and Electrical Engineering with the goal to design an underwater vehicle that employs technologies to create a 5-D map of the seabed.

The company’s RF Communications segment is sponsoring a one-year design project for a team of Electrical and Computer Engineers. The team is tasked with modifying a commercial off-the-shelf quad-rotor helicopter with advanced image and digital signal processing technology to identify and track specific ground-based objects to display the automatic-Wright Right path, allowing it to fly autonomously.

Villanova Summer Innovation Incubator (VII) The Harris Foundation awarded the Colleges of Engineering and Law with a $250,000 grant to create the Villanova Summer Innovation Incubator (VII), a new initiative for summer 2015.

Four multidisciplinary engineering student teams have been competitively selected to participate in the two-month, campus-based accelerator program for which they will receive expanded project budget and the time and space to develop proof of concept prototypes of their own design. That means putting all the tools and technologies needed for that to happen. The project is focused around creating an entrepreneurial team that will be able to apply for grants and attract investments to a startup.

How would people be surprised to know about you?
A6: First University Innovation Fellow,” that evening.

Can you tell us about your family?
A7: My wife is a multi-talented engineer and grandmother, and my daughter is a student at the University.

What’s your favorite thing about your work?
A8: I love working on complex experimental problems.

E verything we do at Harris’ Government Communications segment is sponsored by a two-year capstone design project that will involve students from Mechanical Engineering and Electrical Engineering with the goal to design an underwater vehicle that employs technologies to create a 5-D map of the seabed.

The company’s RF Communications segment is sponsoring a one-year design project for a team of Electrical and Computer Engineers. The team is tasked with modifying a commercial off-the-shelf quad-rotor helicopter with advanced image and digital signal processing technology to identify and track specific ground-based objects to display the automatic-Wright Right path, allowing it to fly autonomously.

Villanova Summer Innovation Incubator (VII) The Harris Foundation awarded the Colleges of Engineering and Law with a $250,000 grant to create the Villanova Summer Innovation Incubator (VII), a new initiative for summer 2015.

Four multidisciplinary engineering student teams have been competitively selected to participate in the two-month, campus-based accelerator program for which they will receive expanded project budget and the time and space to develop proof of concept prototypes of their own design. That means putting all the tools and technologies needed for that to happen. The project is focused around creating an entrepreneurial team that will be able to apply for grants and attract investments to a startup.

How would people be surprised to know about you?
A6: First University Innovation Fellow,” that evening.

Can you tell us about your family?
A7: My wife is a multi-talented engineer and grandmother, and my daughter is a student at the University.

What’s your favorite thing about your work?
A8: I love working on complex experimental problems.
Villanova University College of Engineering was recognized among the nation’s top 50 engineering programs in the 2014 U.S. News & World Report. This makes the 10th year in a row that the College has been ranked among the top 50 programs in the nation, which is a significant achievement for an engineering school. In addition to receiving this national recognition, the College has also been named a "Top 25 Best Online Graduate Engineering Program" by U.S. News & World Report. This ranking is based on several factors, including the quality of the faculty, the availability of student services, and the overall academic environment. The College is committed to providing a high-quality education to its students, both on campus and online, and this ranking is a testament to the College's dedication to excellence in engineering education.

The College of Engineering offers a wide range of programs, including: Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Mechanical Engineering, Sustainable Engineering, and Computer Engineering. These programs are designed to prepare students for careers in engineering and related fields. The College also offers opportunities for students to gain hands-on experience through research and industry partnerships. In addition, the College has a strong commitment to diversity and inclusion, and provides support for students from all backgrounds.

The College of Engineering also has a strong record of student research and publication. In the past year, students have presented their research at national and international conferences, and have published their findings in peer-reviewed journals. The College has a strong network of alumni who support the programs and provide mentorship and job opportunities for students.

The College of Engineering is proud of its accomplishments and is committed to continuing to provide a high-quality education to its students. The College is looking forward to the future and is excited about the opportunities that lie ahead for engineering education.

Gardar Jones, PhD, ’72 ME, Senior Associate Dean of Graduate Studies and Research, explains what sets the College’s program apart: “Whether they’re in the classroom or online, our knowledgeable and dedicated faculty and staff are student-focused and committed to presenting world-class technical content that is relevant and cutting-edge, and can be used immediately in the workplace.”

“I would have had to work harder to complete my degree without the E-Learning option, and I found the recorded lectures and online tools to be a tremendous help in learning and retaining the material.”

“E-Learning at a Glance”

<table>
<thead>
<tr>
<th>Program</th>
<th>Enrollment</th>
<th>Graduates (2002-2014)</th>
<th>Full-time</th>
<th>Part-time</th>
<th>Average Age</th>
<th>Master’s of Sustainable Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>20%</td>
<td>60.5%</td>
<td>39.5%</td>
<td>28</td>
<td>46.1</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>24%</td>
<td>55%</td>
<td>45%</td>
<td>22</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Systems Engineering</td>
<td>26.2%</td>
<td>54%</td>
<td>46%</td>
<td>23.8</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>18%</td>
<td>55%</td>
<td>45%</td>
<td>25</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>18.8%</td>
<td>50%</td>
<td>50%</td>
<td>26</td>
<td>46.1</td>
<td></td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>17.6%</td>
<td>55%</td>
<td>45%</td>
<td>25</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Aerospace Engineering</td>
<td>12.6%</td>
<td>50%</td>
<td>50%</td>
<td>26</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

“Totals Enrolled”

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Graduate Students</td>
<td>165</td>
<td>185</td>
<td>195</td>
<td>205</td>
<td>215</td>
<td>225</td>
</tr>
</tbody>
</table>

“Graduate Programs at a Glance”

“Master’s Degree Students by Program”

“Internationaly Recognized and Honored: Moeness Amin, PhD”

For more information on the College of Engineering, please visit engineering.villanova.edu.

The College of Engineering offers a wide range of programs, including: Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Mechanical Engineering, Sustainable Engineering, and Computer Engineering. These programs are designed to prepare students for careers in engineering and related fields. The College also offers opportunities for students to gain hands-on experience through research and industry partnerships. In addition, the College has a strong commitment to diversity and inclusion, and provides support for students from all backgrounds.

The College of Engineering also has a strong record of student research and publication. In the past year, students have presented their research at national and international conferences, and have published their findings in peer-reviewed journals. The College has a strong network of alumni who support the programs and provide mentorship and job opportunities for students.

The College of Engineering is proud of its accomplishments and is committed to continuing to provide a high-quality education to its students. The College is looking forward to the future and is excited about the opportunities that lie ahead for engineering education.

Gardar Jones, PhD, ’72 ME, Senior Associate Dean of Graduate Studies and Research, explains what sets the College’s program apart: “Whether they’re in the classroom or online, our knowledgeable and dedicated faculty and staff are student-focused and committed to presenting world-class technical content that is relevant and cutting-edge, and can be used immediately in the workplace.”

“I would have had to work harder to complete my degree without the E-Learning option, and I found the recorded lectures and online tools to be a tremendous help in learning and retaining the material.”

“E-Learning at a Glance”

<table>
<thead>
<tr>
<th>Program</th>
<th>Enrollment</th>
<th>Graduates (2002-2014)</th>
<th>Full-time</th>
<th>Part-time</th>
<th>Average Age</th>
<th>Master’s of Sustainable Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>20%</td>
<td>60.5%</td>
<td>39.5%</td>
<td>28</td>
<td>46.1</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>24%</td>
<td>55%</td>
<td>45%</td>
<td>22</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Systems Engineering</td>
<td>26.2%</td>
<td>54%</td>
<td>46%</td>
<td>23.8</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>18%</td>
<td>55%</td>
<td>45%</td>
<td>25</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>18.8%</td>
<td>50%</td>
<td>50%</td>
<td>26</td>
<td>46.1</td>
<td></td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>17.6%</td>
<td>55%</td>
<td>45%</td>
<td>25</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Aerospace Engineering</td>
<td>12.6%</td>
<td>50%</td>
<td>50%</td>
<td>26</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

“Totals Enrolled”

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Graduate Students</td>
<td>165</td>
<td>185</td>
<td>195</td>
<td>205</td>
<td>215</td>
<td>225</td>
</tr>
</tbody>
</table>

“Graduate Programs at a Glance”

“Master’s Degree Students by Program”

“Internationaly Recognized and Honored: Moeness Amin, PhD”

For more information on the College of Engineering, please visit engineering.villanova.edu.
STUDENTS

TAKING IT TO THE STREETS, AND RAILS, AND PORTS, AND AIRFIELDS...

For four decades, until his retirement in 2002, Civil and Environmental Engineering Professor Emeritus James Schnetzer, PhD, ’78 CE, ’81 MSCC was the face of transportation engineering at Villanova University. In 2008, the College of Engineering found a new voice for the transportation program when it hired Assistant Professor Leslie Myers McCarthy, PhD, PE. Few years later, the program grew even stronger with the hiring of глаз Booth Luce Assistant Professor Ser Park, PhD, PTP.

Both Drs. McCarthy and Park came to the college with a passion for transportation engineering and more than 15 years of professional experience. Dr. McCarthy spent much of her early career with the Federal Highway Administration (FHWA), while Dr. Park’s experience includes port and intermodal design work with Tens Ten, a nationally renowned transportation consulting company. This industry experience, combined with their years in academia, has resulted in numerous federal research grants, which have led to invaluable hands-on experiences for many Civil Engineering students interested in the transportation field.

Recent graduates Paul Casazza ’14 CE and Douglas Allen ’14 CE are two students who benefited from their professors’ research opportunities. As seniors they worked on grant-related projects, which subsequently led to published papers on which they are credited as co-authors. Casazza recommends all undergraduates pursue these types of opportunities. “Working with Drs. McCarthy and Park was an extremely valuable experience. It not only had me interacting with my professors outside the classroom, but also gathering insight from working professionals in transportation departments across the country,” he says.

“Professional experiences differentiate our students to both employers and graduate programs,” Leslie Myers McCarthy, PhD, PE, assistant professor, Civil and Environmental Engineering.

In addition to her research, Dr. McCarthy teaches a senior capstone course in transportation. This spring, her group of 11 students worked on “Designing Upgrade of the National Highway System Connectors to Intermodal Freight Facilities in the Philadelphia Area.” The team conducted an evaluation of infrastructure, alignment and operability design, focusing on roadway and bridge blueprints for connections between these ports and the neighboring interstate highways. In April, three of the students presented their recommendations and design at the meeting of the Good Transportation Sense Task Force of the Delaware Valley Regional Planning Commission—the project sponsor and client.

The ports and interstates that were a focus of this senior capstone project also connect, literally and figuratively, to another transportation topic that Dr. McCarthy is fascinated about: railways. In recent years the rail industry has found new life with the country’s energy production boom. As this growth has benefited railroad companies, it has also presented the challenge of a shrinking workforce. “Many railway engineers are at or nearing retirement age,” explains Dr. McCarthy, who sees this as an opportunity for the College of Engineering. “The time is ripe for universities to academically invest in railway engineering.”

Villanova has taken steps in that direction. Few undergraduate courses now incorporate modules related to railway engineering, and two graduate courses are dedicated to it. From 2011-2013, railway-related projects were among the senior capstone design options, and last year the senior-level Professional Practice for Engineers course involved a local grade crossing study.

In 2016, the University was named one of 14 affiliate members of the National Railway Center, a rail-focused, seven-university consortium under the U.S. Department of Transportation. Members are recognized for their commitment to improving and expanding rail education, research, workforce development and technology transfer. Villanova currently is the only school in the Philadelphia region with affiliate status, and Dr. McCarthy hopes the College further establishes itself as a leader in this field. “I would like our next step to be an academic partnership with a railway company like CSX, the resulting research opportunities would be mutually beneficial,” she says.

TRANSPORTATION ENGINEERING SUCCESS STORIES

Villanova undergraduates, graduate students and alumni are making their mark in transportation engineering. Dr. McCarthy notes: “These success stories demonstrate that Villanova University is recognized by national industry groups as a leading research institution in the transportation field. Students benefit from the investments we’re making in this program.”

Ms. Maria Guercio, PhD student in the Department of Civil and Environmental Engineering, was honored at the annual Transportation Research Board (TRB) international conference for completion of the Airport Cooperative Research Program (ACRP) Graduate Research Fellowship. Guercio is the first Villanova student to win this 12-month, $10,000 award, which is presented each year to no more than 10 students from the U.S. and Canada. Her research, “Quantifying the Performance of Energy Conscious Materials in Flexible Airfield Pavements,” will be published in the Journal of the Transportation Research Board.

After being accepted into the U.S. Department of Transportation’s Summer Transportation Internship Program for Doctoral Students (STIPDG), Jonathan Mize ’16 CE spent summer 2014 interning as a transportation engineer assistant with the Office of Infrastructure Research & Development, within the FHWA. Jonathan is the fifth student from the College to be accepted in the STIPDG program in the past five years. In addition to his internship, research that Jonathan conducted with Dr. Park was presented at a railway engineering conference and published in the January 2015 edition of the Journal of the Transportation Research Board.

Kimberley Musey ’15 CE was awarded a Suzanne Balzano Scholarship from the (Philadelphia chapter of WTS), Women’s Transportation Seminar, an international organization dedicated to building the future of transportation through the global advancement of women. As an undergraduate researcher for Dr. Ser Park, Kimberley worked on improving the safety of historical courses through high friction surface treatments. Post-graduation, Kimberley hopes to continue working with Dr. Park and plans on earning an interdisciplinary master’s degree in structures and transportation.

Engineering students come to Villanova expecting a degree. But our goal is to give them an education that will ignite their heart, inspire their mind, illuminate their spirit and last them a lifetime.

Gary A. Gabriele, PhD, Drosack Endowed Dean of the College of Engineering

∂

STUDENTS

TAKING IT TO THE STREETS, AND RAILS, AND PORTS, AND AIRFIELDS...

For four decades, until his retirement in 2002, Civil and Environmental Engineering Professor Emeritus James Schnetzer, PhD, ’78 CE, ’81 MSCC was the face of transportation engineering at Villanova University. In 2008, the College of Engineering found a new voice for the transportation program when it hired Assistant Professor Leslie Myers McCarthy, PhD, PE. Few years later, the program grew even stronger with the hiring of глаз Booth Luce Assistant Professor Ser Park, PhD, PTP.

Both Drs. McCarthy and Park came to the college with a passion for transportation engineering and more than 15 years of professional experience. Dr. McCarthy spent much of her early career with the Federal Highway Administration (FHWA), while Dr. Park’s experience includes port and intermodal design work with Tens Ten, a nationally renowned transportation consulting company. This industry experience, combined with their years in academia, has resulted in numerous federal research grants, which have led to invaluable hands-on experiences for many Civil Engineering students interested in the transportation field.

Recent graduates Paul Casazza ’14 CE and Douglas Allen ’14 CE are two students who benefited from their professors’ research opportunities. As seniors they worked on grant-related projects, which subsequently led to published papers on which they are credited as co-authors. Casazza recommends all undergraduates pursue these types of opportunities. “Working with Drs. McCarthy and Park was an extremely valuable experience. It not only had me interacting with my professors outside the classroom, but also gathering insight from working professionals in transportation departments across the country,” he says.

“Professional experiences differentiate our students to both employers and graduate programs,” Leslie Myers McCarthy, PhD, PE, assistant professor, Civil and Environmental Engineering.

In addition to her research, Dr. McCarthy teaches a senior capstone course in transportation. This spring, her group of 11 students worked on “Designing Upgrade of the National Highway System Connectors to Intermodal Freight Facilities in the Philadelphia Area.” The team conducted an evaluation of infrastructure, alignment and operability design, focusing on roadway and bridge blueprints for connections between these ports and the neighboring interstate highways. In April, three of the students presented their recommendations and design at the meeting of the Good Transportation Sense Task Force of the Delaware Valley Regional Planning Commission—the project sponsor and client.

The ports and interstates that were a focus of this senior capstone project also connect, literally and figuratively, to another transportation topic that Dr. McCarthy is fascinated about: railways. In recent years the rail industry has found new life with the country’s energy production boom. As this growth has benefited railroad companies, it has also presented the challenge of a shrinking workforce. “Many railway engineers are at or nearing retirement age,” explains Dr. McCarthy, who sees this as an opportunity for the College of Engineering. “The time is ripe for universities to academically invest in railway engineering.”

Villanova has taken steps in that direction. Few undergraduate courses now incorporate modules related to railway engineering, and two graduate courses are dedicated to it. From 2011-2013, railway-related projects were among the senior capstone design options, and last year the senior-level Professional Practice for Engineers course involved a local grade crossing study.

In 2016, the University was named one of 14 affiliate members of the National Railway Center, a rail-focused, seven-university consortium under the U.S. Department of Transportation. Members are recognized for their commitment to improving and expanding rail education, research, workforce development and technology transfer. Villanova currently is the only school in the Philadelphia region with affiliate status, and Dr. McCarthy hopes the College further establishes itself as a leader in this field. “I would like our next step to be an academic partnership with a railway company like CSX, the resulting research opportunities would be mutually beneficial,” she says.

TRANSPORTATION ENGINEERING SUCCESS STORIES

Villanova undergraduates, graduate students and alumni are making their mark in transportation engineering. Dr. McCarthy notes: “These success stories demonstrate that Villanova University is recognized by national industry groups as a leading research institution in the transportation field. Students benefit from the investments we’re making in this program.”

Ms. Maria Guercio, PhD student in the Department of Civil and Environmental Engineering, was honored at the annual Transportation Research Board (TRB) international conference for completion of the Airport Cooperative Research Program (ACRP) Graduate Research Fellowship. Guercio is the first Villanova student to win this 12-month, $10,000 award, which is presented each year to no more than 10 students from the U.S. and Canada. Her research, “Quantifying the Performance of Energy Conscious Materials in Flexible Airfield Pavements,” will be published in the Journal of the Transportation Research Board.

After being accepted into the U.S. Department of Transportation’s Summer Transportation Internship Program for Doctoral Students (STIPDG), Jonathan Mize ’16 CE spent summer 2014 interning as a transportation engineer assistant with the Office of Infrastructure Research & Development, within the FHWA. Jonathan is the fifth student from the College to be accepted in the STIPDG program in the past five years. In addition to his internship, research that Jonathan conducted with Dr. Park was presented at a railway engineering conference and published in the January 2015 edition of the Journal of the Transportation Research Board.

Kimberley Musey ’15 CE was awarded a Suzanne Balzano Scholarship from the (Philadelphia chapter of WTS), Women’s Transportation Seminar, an international organization dedicated to building the future of transportation through the global advancement of women. As an undergraduate researcher for Dr. Ser Park, Kimberley worked on improving the safety of historical courses through high friction surface treatments. Post-graduation, Kimberley hopes to continue working with Dr. Park and plans on earning an interdisciplinary master’s degree in structures and transportation.

Engineering students come to Villanova expecting a degree. But our goal is to give them an education that will ignite their heart, inspire their mind, illuminate their spirit and last them a lifetime.

– Gary A. Gabriele, PhD, Drosack Endowed Dean of the College of Engineering

∂
The three leadership gifts to the College of Engineering include:

- $13.5 million commitment—a blend of a cash and estate gift—from Jan and Paul J. Varello ’65 CE, CEO of Sterling Construction Company Inc., who will support the College’s Strategic Initiatives Fund, empowering successive deans to direct funds toward high-priority needs, from faculty and student support, to academic programs, to infrastructure and equipment. The size and scope of the gift will fuel the College’s continued evolution as a premier institution for engineering education in the 21st century.

- $3 million commitment from Denise and John P. Jones III ’72 ChE, retired chairman and CEO of Air Products and Chemicals Inc., to establish the Jones Family Student Learning Commons in a planned expansion of the Center for Engineering Education and Research (CEER). The patio of CEER will be enclosed and converted into a state-of-the-art Student Learning Commons. Students will flock to this 4600-square-foot communal area to study in groups, work on multidisciplinary team projects, and attend seminars and guest lectures. The space will be an ideal venue in which the College and University can host special events.

- $2.3 million commitment from Nancy Dicciani, PhD, ’69 CHE, Villanova trustee and retired president and CEO of the Specialty Malleables Division, Honeywell International Inc., to establish the Nancy K. Dicciani PhD ’69 Endowed Chair in Chemical Engineering. The funds will enable the chair to attract top-notch faculty, invest in curricular development, and raise Villanova’s visibility as a leader in research and scholarship in critical and emerging areas of chemical engineering.

Villanova launched the public phase of its campaign in Oct. 2013, and as of May 10 has raised $431 million toward its $600 million goal. For more information on the Villanova Campaign to Ignite Change, visit www.forthegreatergood.com.

Paul Varello had a choice to make. He enrolled at Villanova University in 1961 to play football, but when he arrived for registration, he learned that the rigorous athletics schedule meant that he couldn’t pursue an equally rigorous engineering degree. In order to continue his football career, he decided to switch majors. So, Varello decided to become a Villanova engineer. That decision was a defining moment in Varello’s life, setting him on the path to his illustrious engineering career—he currently serves as CEO of Sterling Construction Company Inc. Varello and his wife Jan have brought this success back to Villanova, making a historic $13.5 million gift to the College of Engineering.

Varello credits his Villanova education for teaching him not only the fundamentals of engineering, but also the foundation for a purposeful life. “I learned to value the Augustinian tradition and the call to do something in service to others. The larger lessons I learned at Villanova have stayed with me my whole life,” he says.

Varella didn’t have an easy student experience. He went to class and studied hard, and he worked every summer and break period to afford the tuition. His experience taught him diligence and determination, and gave him an appreciation for the academic opportunities he had at Villanova. Since graduation, Varella has supported the University every year. “In my younger days, I didn’t have a lot of money for discretionary spending, but I believed it was important to give back even then,” he says. “I’m fortunate that today I can continue to help Villanova, but in ways that also benefit me personally.”

While many major gifts support specific needs, such as endowing a faculty chair position or funding the construction of new facilities, the Varellos chose to direct their gift to be used at the dean’s discretion. The endowed fund will provide the College with perpetual support, and will be used wisely to ensure that Villanova Engineering continues to lead the way in academic innovation and research.

The Varellos were inspired to structure their gift in this way based on their confidence in the leadership and direction of the College. “Dean Gabriele is an outstanding leader who understands engineers and who knows how important it is to graduate engineers who not only have a good education, but also a sense of commitment to society,” Varello says. “Dean Gabriele manages to convey that important goal in everything he does.”

The Varellos also hope that their gift will reinforce the College’s rightful place on the national stage.

“We want to see the College of Engineering continue to grow and to be recognized as one of the premier engineering schools in the nation where the best and brightest high school students want to come to Villanova because they know the College’s reputation.”

Paul Varello

Varella remains an active part of the Villanova alumni community. This June, he’ll return to campus for his 50th Reunion. In all of the encounters he’s had in his career, Varello says he can always tell when he’s face to face with a fellow Wildcat. “Villanova is different people in the most positive way,” he adds. “When you meet another Wildcat, you know immediately.”

From Small Beginnings to Historic Gift, Varellos’ Generosity Gives Back

College of Engineering Receives Three Leadership Gifts Totalling $19 Million

Villanova University’s College of Engineering has received three leadership gifts totaling $19 million in fiscal year 2015, which closes on May 31. The largest is a $13.5 million commitment from Jan and Paul J. Varello ’65 CE, which marks the second-largest gift ever made to the University. Part of the University’s $500 million campaign, For the Greater Good, the Villanova Campaign to Ignite Change, these philanthropic investments will support the College’s focus on innovative engineering education and help ensure its future for generations to come.

“We are tremendously grateful to these donors for their generosity and dedication to Villanova,” says the Rev. Peter M. Donohue, OSA, PhD, University President. “These gifts reflect a desire by Villanova alumni and friends to play a key role in charting the University’s future by expanding the academic opportunities for current and future engineering students.”

Today’s engineering students demand a dynamic learning environment, and the College is committed to redefining the way its students learn through innovative academic initiatives—from flipped classrooms to solving real-world problems through service-learning experiences across the globe. These leadership gifts will empower the College to realize its vision and achieve critical campaign priorities, including Faculty and Student Support, Facilities, Academic and Programmatic Initiatives, and Endowment.

“These gifts are an investment in the future of the College of Engineering, providing a strong foundation upon which we will achieve our vision and sustain our commitment to a premier engineering education built upon our Augustinian ideals,” says Gary Gabriele, PhD, Drosdick Endowed Dean of Engineering at Villanova University. The Varellos also hope that their gift goal in everything he does.”
F or the Greater Great®: The Villanova Campaign to Ignite Change is an opportunity to dramatically enhance the resources, experiences and advantages the College of Engineering provides to its students.

Villanova Engineering strives to be a leader in innovative engineering education. The College already is ahead of many national trends, including the percentage of women versed in the engineering program and the number of women on the College’s faculty. The College offers master’s degrees in sustainable engineering, bioengineering and cybersecurity, and a master’s in microengineering, entrepreneurship, which is now the College’s most popular minor. But there’s even more the College can do, and it is in doing so that Villanova Engineering enjoys a unique opportunity. The College of Engineering has a goal to raise $50 million as part of the campaign, and as of May 10, 2015, it has raised $42.7 million toward that goal.

ALUMNI, UNIVERSITY LEADERS GATHER FOR CAMPAIGN CELEBRATION

The Rev. Peter M. Donohue, OSA, PhD, ’75; Gary A. Gabriele, PhD, Drosdick Endowed Dean of Engineering; and John Hartner ’85 ME, chair of the College of Engineering Committee and a member of the College’s Advisory Board. They provided updates on the College’s campaign progress and their vision for Villanova’s leadership in innovative engineering programs. In addition, faculty members Randy Weinstein, PhD, professor, Chemical Engineering and Associate Dean of Academic Affairs; and Amy Flaschle, PhD, ’91 ME, ’96 MSEME, professor, Mechanical Engineering, along with graduate student Alex Poultney ’14 ME presented brief talks on flipped classrooms, women in engineering and service-learning experiences, respectively, points of distinction and pride for the College of Engineering.

3-D PRINTING COMPETITION TEACHES LESSONS, RAISES FUNDS FOR CHARITY

J unior engineering students in Assistant Professor Ed Dougherty’s Entrepreneurship Practicum had the opportunity to use that innovation given back to the community. Dougherty’s 9/11 NE, in the featured of the Engineering Entrepreneurship minor programs, and Gary S. Simmons, director of Villanova’s Multiphysics Design Laboratory (MDL), devised a competition in which student teams were challenged to design and create products that could be distributed using 3-D printing. The MDL acquired a 3-D printer in 2013, and the competition was held to both “help students learn about the capabilities of the printer and promote the use of 3-D printing,” says Simmons. Teams then marketed and sold their products to the Villanova community, donating profits to the charity of the winning teams choice.

Simmons explained that the real challenge of the competition was to make a product that could be profitable off a 3-D printer, which is more cost-effective for the creation of prototypes than the manufacturing of products. 3-D printing can cost up to seven dollars per ounce of support material used, so product pricing can add up quickly. “The products designed for this competition had to be kept simple,” says Simmons. “You need something that is low production cost and high in market value.”

Incorporating lessons from their entrepreneurship coursework, students work hard to make sure they are moving forward toward marketability. From 3-D printing, to the competition’s focus on 3-D printing, 3-D printing, MDL acquired a 3-D printer in 2013, and the competition was held in both “help students learn about the capabilities of the printer and promote the use of 3-D printing.”

For more information about how you can participate in the campaign, contact Cindy Rutenbar, director of development, cynthia.rutenbar@villanova.edu or 610-519-8973.

“Students Alex McMullen ’15 ME, Edward Zhu ’15 ME, graduate student Alex Poultney ’14 ME presented brief talks on flipped classrooms, women in engineering and service-learning experiences, respectively, points of distinction and pride for the College of Engineering.

College sponsors its second University Innovation Fellow

In yet another example of its commitment to entrepreneurship and innovation in engineering education, the College has sponsored in second University Innovation (UI) Fellow. Mechanical Engineering sophomore Erik Koehr is one of 125 students from 52 U.S. higher education institutions to have been named a Fellow by the National Center for Engineering Pathways to Innovation (Epicenter). Epicenter is funded by the National Science Foundation and directed by Stanford University and Verizon/Walmart.

The UI Fellow program empowers students in engineering and related fields to become agents of change at their schools. They work to ensure that students gain the knowledge, skills and attitudes required to compete in the economy of the future. To accomplish this, the Fellows advocate for lasting institutional change and create opportunities for students to engage with entrepreneurship, innovation, creativity, design thinking and ventures creation at their schools.

With mentors in Business and Engineering Entrepreneurship, Erik is equipped to take on this challenge. In an op-ed piece he wrote about his vision as a Fellow, Erik takes our educational system with giving students the tools they need for what lies ahead.

“We need to show people new projects into the future and we need to give them the resources and support to help them discover that passion. Once a passion is discovered, the educational system needs to empower students to transition from their studies to rewarding careers that benefit society. In this way, we will create lasting positive societal change and help enable personal career satisfaction.”

COLEGENDR UPDATE

Send your current email address to alumni@villanova.edu to ensure that you’re on the mailing list.
While hardware issues ultimately kept Team WORX out of the final round, Villanova’s team leader C. Nataraj, PhD, professor and chair of the Mechanical Engineering Department, found much to be happy about, including the team’s four prizes. “Even if we didn’t win, I’m proud of my team for working so hard.” Team WORX’s success was even recognized at the SEI/ASCE (American Society of Civil Engineers) awards event. Villanova’s team placed third and was recognized for its hardware and engineering design. “ABC News actually did their filming in front of our car, which meant we got national recognition,” says Nataraj.

SUMMARY

Villanova’s Steel Bridge team competed in the Mid-Atlantic Region Steel Bridge Challenge held at Pennsylvania State University. Tasked with designing and building a 15-foot scale steel bridge, Villanova’s team placed fourth, just one spot away from making it to the national competition. The team’s steel bridge placed third overall for strength, held two arch bridges.

ENGINEERING FRESHMEN REFLECTIONS

Christopher Austin
Mechanical Engineering
Hometown: Philadelphia, Pennsylvania
Christopher is passionate about automobiles. Fittingly, he is a Precision Carpenter Scholarship winner whose immediate plans included joining the Nova Racing team. He also joined the Mechanical Engineering Honor Society, and has founded a group of friends to unwind with. While he’s adjusted well to life on campus, he notes, “I get a lot of phone calls from my mother.” Academically, Christopher looks forward to hands-on projects with faculty. He links incoming freshmen, “It’s okay to get a little lost. You just have to be willing to ask questions and find your way again.”

Evan Barnett
Mechanical Engineering
Hometown: Newtown, New Jersey
Evan did not bring any keepsakes to Villanova. Instead, he brought along his twin—Da, a Computer Engineering major and his arm.

Evan says he’d be happy if Dan, his “older and best friend,” was here on this journey, but both are pleased to be forging their own paths. Evan enters’ Sen exams, internships and spending time with friends. “I look forward to a year in which I’ll be able to see all my friends across the country. I’m hoping to travel to the West Coast, visit my friends, and enjoy my time there.”

Emily Dailey
Mechanical Engineering
Hometown: Tulsa, Oklahoma
After her oldest friend was diagnosed with lymphoma, Emily began working to raise money for cancer. She has joined the team’s Central Ohio Chapter, and now she’s moving forward. Emily’s advice to incoming freshmen is to find a group of friends. “Don’t you dare talk to anyone without being a part of something. You’re going to find that your life’s best at Villanova.”

Nina Hebel
Mechanical Engineering
Hometown: Kingwood, Texas
Nina was an exchange student in Germany, and now she’s a team leader for the team’s Mid-Atlantic Region Steel Bridge Challenge. She’s currently serving as the team’s liaison officer, and is hoping to travel to the West Coast. “I poured my heart into that project. It’s been very rewarding.”

Kelly Miller
Chemical Engineering, minor in Business
Hometown: Denver, Colorado
Kelly arrived at Villanova with a championship basketball team and a football team. She enjoys the team’s banter, and new home. She’s building at Villanova. Kelly is involved with Special Olympics and is part of the Student Ambassadors program. Kelly enjoys Villanova’s opportunities and is part of the Student Ambassadors program. Kelly enjoys Villanova’s opportunities and is part of the Student Ambassadors program. Kelly enjoys Villanova’s opportunities and is part of the Student Ambassadors program.

Joseph Saengendo
Mechanical Engineering
Hometown: Kampala, Uganda
When they said their goodbyes, Sarrah’s boyfriend fed her a meal with two rice balls, and they ate it together. They were able to see each other every day, which helped her feel closer to her friends. They were able to travel to South America, and spent the winter holidays in Ecuador. “I hope to become involved with campus research on the topic of engineering abroad.”

Sarrah Tuong
Computer Engineering
Hometown: Bellows Falls, Vermont
Sarrah’s best friend is with her on campus, and they are able to spend time together. They enjoy exploring downtown Philadelphia. “I try to stay up to date with all the news and events in the city.”

Emily Lownor
Civil Engineering
Hometown: Whitestone, California
Upon high school graduation, Elizabeth was given a medal by her grandmother who emigrated from Holland to America. It reminded her of her heritage. She’s been a part of the team’s Mid-Atlantic Region Steel Bridge Challenge. She’s looking forward to studying abroad, internship opportunities, and challenging coursework.

Elizabeth Lownor
Civil Engineering
Hometown: Whitestone, California
Upon high school graduation, Elizabeth was given a medal by her grandmother who emigrated from Holland to America. It reminded her of her heritage. She’s been a part of the team’s Mid-Atlantic Region Steel Bridge Challenge. She’s looking forward to studying abroad, internship opportunities, and challenging coursework.

Complete Reprint details are available at reunion.villanova.edu.
ENGINEERING STUDENTS BUILD EOD ROBOT

123...The experience of working with soldiers, first responders, and children in our service projects has been invaluable. It has taught me the importance of understanding the context in which my engineering skills are needed. This is something that I believe any engineer should strive to learn.

Lea Mahoney quotes from her article about her experience in the Villanova Engineering Service Learning Program.
IN THIS ISSUE
College News .................................................. 1
Faculty .......................................................... 5
Students .......................................................... 6
International Service Learning ......................... 20
Where Are They Now? ...................................... 11

Student Success Stories
From undergraduates to doctoral students, the College of Engineering attracts the best and the brightest. Here are just a few of our standouts from the past academic year:

Award Winning Worm Research
Villanova Undergraduate Research Fellow Jack Dienes ‘15 ChE and Comp Sci (dual major) worked with Assistant Professor Jacob Elmer, PhD, Chemical Engineering, to purify hemoglobins from different invertebrates (e.g. worms) and test them as potential blood substitutes. A poster of his work placed third in its division in the poster competition at the Academy of Chemical Engineering Annual Meeting.

Engineers Week Winner
During Delaware Valley Engineers Week, Richard Holden ‘15 ME was awarded the Lewis A. Caccese Scholarship through the Philadelphia Engineering Foundation. Selection was based on academic performance, extracurricular professional and community activities, and the Dean’s recommendation.

Travel Grant to Australia Conference
Branka Jokanovic, a PhD student and research assistant in the Center for Advanced Communications (CAC), presented “Sparse and Cross-term suppression in wideband MIMO systems with spatial diversity and precoding” at the 2014 IEEE Global Communications Conference. She received a highly competitive travel grant to attend this flagship conference in Australia. Jokanovic is seen in this photo with Moeness Amin, PhD, CAC director and professor, Department of Electrical and Computer Engineering.

Conference Paper Presentations
Doctoral student Mahmoud Kabalan presented a poster and paper at the IEEE Global Humanitarian Technology conference, for which he received conference participation awards. Kabalan (right) is seen in this photo with Pritpal Singh, PhD, chair and professor, Department of Electrical and Computer Engineering.

First Place in Paper Competition
CAC research assistant and PhD student Si Qin won first place for “DOA Estimation of Mixed Coherent and Uncorrelated Signals Exploiting a Nested MIMO System” in the student paper competition at the 2014 IEEE Communications and Information Theory Conference. Qin is seen in this photo with Yimin Zhang, PhD, research professor and director of the Wireless Communications and Positioning Laboratory.

Data Center Research Wins Awards
Joseph Schaadt ‘15 ME won best poster in the Undergraduate Research and Design Expo at the American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition. His research, “Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling,” also earned him Villanova’s Falvey Scholars Award for outstanding undergraduate research.

Presidential Scholar Heads to Ireland
The U.S.-Ireland Alliance selected Presidential Scholar Stephen Sechler ‘15 EE for the 2016 class of George J. Mitchell Scholars. As a winner of this prestigious award, Sechler will study Bioengineering at Trinity College Dublin, engaged in research to develop new technology for the hearing-impaired.

Engineers Place First in VSEC
Junior Chemical Engineering majors Thomas Iervolino and Devin Good were awarded first place and $5,000 in the 2015 Villanova Student Entrepreneurship Competition. Their concept—Vanquish Ink—is magnetically removable tattoo ink and the equipment needed for the removal process.

Follow us on Facebook, LinkedIn and Twitter @NovaEngineer