

CLEVELAND STATE UNIVERSITY



WASHKEWICZ

COLLEGE OF ENGINEERING

2018 - 2019 ISSUE

— OPEN FOR —
LEARNING

STUDENTS EXPERIENCE THE NEW
DONALD E. WASHKEWICZ HALL



INSIDE: STUDENTS | ALUMNI | PARTNERSHIPS | FACULTY | PROGRAM

— Message —
FROM
— the —
DEAN



Dear Alumni and Friends,

Welcome to the 2018-19 Washkewicz College of Engineering Annual Magazine! I hope this issue will give you a glimpse of all the exciting things happening in our College.

This year, again, we have a record-breaking number of undergraduates in the College, with well over 2,100 undergraduate and 350 graduate students. That is almost three times larger than 10 years ago.

What attracts the students to our program?

Maybe it is our excellent industry engagement via co-ops, internships and our industry-sponsored senior design projects that help us graduate “Ready-to-Go Engineers,” preparing our students for the real world of working as an engineer. Our hands-on approach to engineering education makes it easy for our students to find jobs upon graduation.

Or it could be our beautiful and functional new building. Donald E. Washkewicz Hall provides a one-of-a-kind learning environment, which undoubtedly has attracted a surge of students this year. It features the Dan T. Moore MakerSpace, where students can transform their ideas into reality. The building also features a very unique teaching lab: the Freshman Design Lab. It is solely dedicated to providing an opportunity for first-year engineering students to learn about real-world engineering. Phase II of Washkewicz Hall will open in January of 2019, with additional and much-needed classrooms, teaching labs and research labs.

Of course, with our outstanding faculty and staff who work hard every day to ensure the success of our students, additional students are attracted to our programs. Over the last few years, faculty and staff accomplishments have been recognized with research awards, including the very prestigious CAREER Award from the National Science Foundation, and teaching awards.

Additionally, our highly accomplished alumni who inspire our students and also give back to the College are a definite motivator for students to join us. With the generous support of alumni and friends, we can provide scholarships and many unique services to students.

I think all of these things combined, in addition to being in downtown Cleveland, have made the Washkewicz College of Engineering a top choice for so many. Now we are looking forward to yet another successful year. Thank you for all your support.

Sincerely,

ANETTE M. KARLSSON, PH.D.

Dean, Washkewicz College of Engineering



WASHKEWICZ
2018-2019 ISSUE

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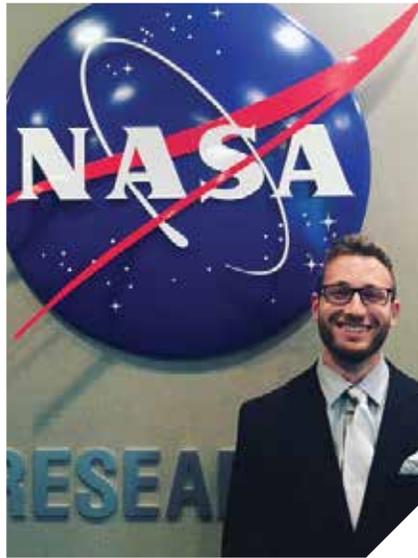


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PARTNERSHIP

NEW OPPORTUNITIES

Cleveland State University celebrates the dedication of the state-of-the-art Donald E. Washkewicz Hall with a ribbon-cutting ceremony.

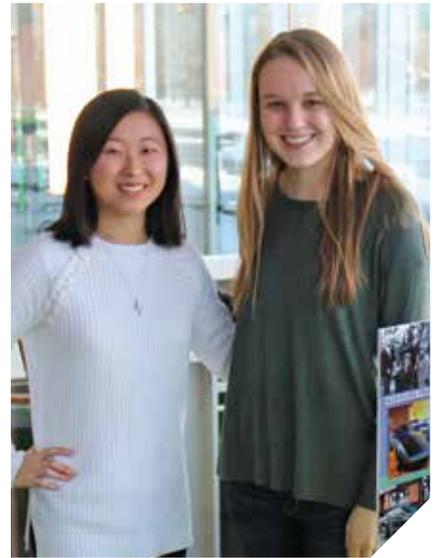


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STUDENTS

OUT OF THIS WORLD

A longstanding cooperative education and internship program between CSU and NASA advances space science and exploration for students.



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PROGRAM

ATTRACTING WOMEN ENGINEERS

Two new programs to attract more female students and increase the number of women in engineering.



PARTNERSHIP



WASHKEWICZ COLLEGE

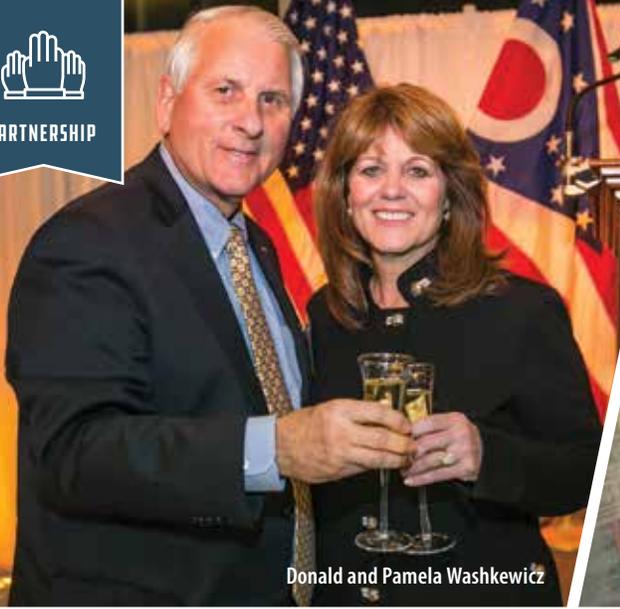
NEW *Opportunities*

**CLEVELAND STATE UNIVERSITY CELEBRATES
DEDICATION OF DONALD E. WASHKEWICZ HALL.**





PARTNERSHIP



Donald and Pamela Washkewicz



CLEVELAND STATE UNIVERSITY dedicated its new state-of-the-art engineering facility, Donald E. Washkewicz Hall, in a ribbon cutting held on campus on December 15, 2017. The building, made possible by a combined \$20 million gift from Donald and Pamela Washkewicz and the Parker Hannifin Foundation, includes teaching and research laboratories, simulation labs for computer modeling, student collaboration spaces and smart classrooms. As part of the festivities, Donald and Pamela Washkewicz announced a new \$1 million gift for the Washkewicz Scholars Program.



"I am extraordinarily pleased to be here today with Don and Pam Washkewicz to celebrate the dedication of this tremendous new resource for our students, our University and the broader community," said Dr. Ronald M. Berkman, then president of Cleveland State University. "I also want to thank the Washkewiczes for their latest gift, which will further educational opportunity for all and support our next generation of engineers and business leaders."

"Pam and I and our entire family have been delighted to see this facility take shape and are truly honored to have had the opportunity to work with President Berkman to enhance the important mission of the University," shared Donald Washkewicz. "We hope the additional support we are announcing today will enable the CSU engineering program to do even more to make engineering a core driver of job growth and economic opportunity in the region."

The new building also features the Dan T. Moore MakerSpace, where students can transform their ideas into reality using state-of-the art technology, and the Parker Hannifin Human Motion and Control Lab, which is developing innovative orthotics and prosthetics to assist individuals with mobility issues.



WE HOPE THE ADDITIONAL SUPPORT WE ARE ANNOUNCING TODAY WILL ENABLE THE CSU ENGINEERING PROGRAM TO DO EVEN MORE TO MAKE ENGINEERING A CORE DRIVER OF JOB GROWTH AND ECONOMIC OPPORTUNITY IN THE REGION.



DONALD WASHKEWICZ

The facility was financed through a public-private partnership, through capital funds provided by the State of Ohio. Dan T. Moore and the estate of Frederick H. Ray provided additional support.

The Washkewicz Scholars Program provides full academic scholarships for undergraduate students in an engineering discipline, including civil, mechanical, electrical, computer or chemical engineering.

"CSU is committed to developing first-in-class education, research and engaged learning opportunities that will continue to ensure that we are graduating 'Ready-to-Go Engineers,'" added Anette M. Karlsson, dean of the Washkewicz College of Engineering. "We would like to thank the Washkewiczes for their sustained commitment to this goal and to the continued elevation of CSU as a premier urban university."

Donald Washkewicz graduated with a degree in mechanical engineering from Cleveland State in 1972 and joined Parker Hannifin the same year. He rose up through the ranks to ultimately serve as the company's chairperson and chief executive officer, retiring in 2016. In recognition of Donald and Pamela Washkewicz's significant contributions to CSU, the University named the College of Engineering in their honor.



OPEN FOR

Learning

Students were introduced to the new Washkewicz Hall during grand opening festivities.



IN THE SPACE ON CHESTER AVENUE that was once occupied by the Chester Building stands the new Donald E. Washkewicz Hall, home to the College of Engineering. This state-of-the-art building is the crown jewel of Chester Avenue. In order to celebrate right, the College hosted several events to commemorate this new chapter in the College's history.

As the new semester was underway, and our move into the new space nearly complete, the College staff organized an online scavenger hunt, #washkewiczfinds, highlighting some of the new spaces students would need to know about in Washkewicz Hall.

In early February, the Student Success Suite hosted an open house to introduce the new space to the campus community. The Student Success Suite is comprised of the Dean's Office, Advising, Student Recruitment, the Center for Engineering Experiential Learning and Senior Design coordination. Previously, all the student support offices were spread out over multiple floors. With this new space, we have created a one-stop shop for engineering.

A weeklong series of events were planned for National Engineers Week to culminate in our grand opening celebration. The highlight of this week was the time capsule event, which brought then President Berkman and College namesake Donald Washkewicz to the lobby area, where a time capsule was interred. It houses letters to future students, pictures of the present and other mementoes that will be unearthed in 2068.

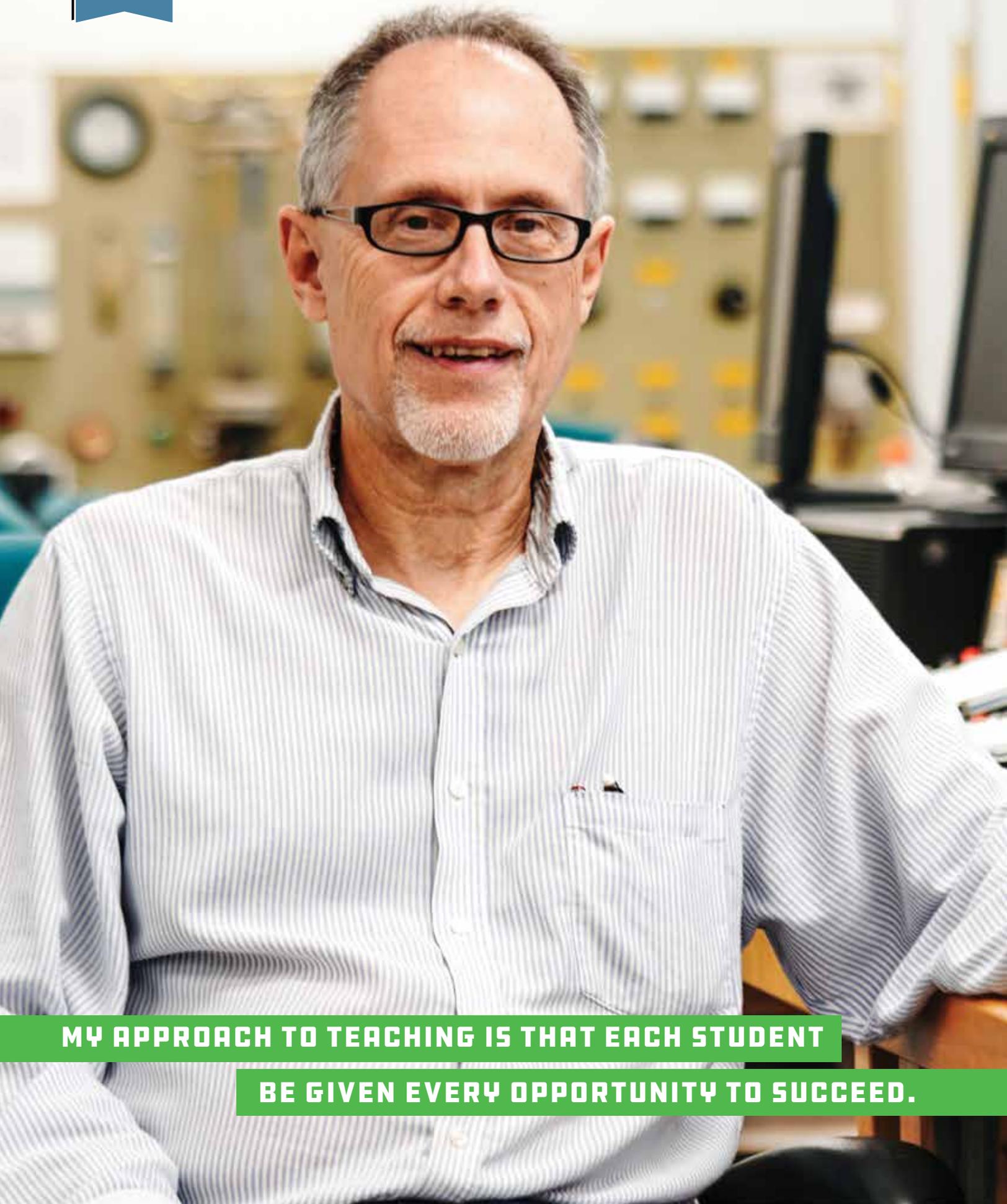
Also that week, an alumni reception was held in the fourth floor meeting space to show off the new digs and give alumni an opportunity to mingle with current students. Tours were conducted of the facilities and food and drink were enjoyed by all. This event was a huge success and well over 100 alumni and industry sponsors were in attendance.

To round out the week, the Fenn Academy hosted a lunch event, including a tour, for our high school partners throughout Northeast Ohio.

For the all the attendees that came to the various events, commemorative reusable water bottles and phone pop-sockets were given out as thanks.



FACULTY



MY APPROACH TO TEACHING IS THAT EACH STUDENT

BE GIVEN EVERY OPPORTUNITY TO SUCCEED.

Michael Gallagher

ASSISTANT PROFESSOR OF PRACTICE

Department of Mechanical Engineering

WHILE FURTHERING ONE'S EDUCATION away from home typically enhances the experience, assistant professor of practice Michael Gallagher took advantage of the quality institutions in our backyard: a bachelor's degree in mechanical engineering from CSU, followed by a master's degree in mechanical engineering from Case Western Reserve University.

Professor Gallagher had a variety of engineering roles at two Northeast Ohio companies where he worked for a total of 40 years: Arthur G. McKee (seven years) and Swagelok (33 years). He pursued a strong interest in teaching during the latter half of that period, as an adjunct faculty member at Lakeland Community College and CSU.

Professor Gallagher's work at Arthur G. McKee was focused on stress analysis of process piping systems. The work includes assessing the effects of pressure, gravity, thermal expansion, seismic and vibration. Fun fact: The Arthur G. McKee company was once located in the Chester Building.

His work at Swagelok encompassed a variety of product health, analysis, design and development aspects. Swagelok is a manufacturer of fluid system components. There was plenty of opportunity to explore and apply the many facets of engineering to the numerous Swagelok products. A few areas of particular interest were: a fluoropolymer plug valve and the associated research and testing on polymer creep and how it affected product rating; the effects of differential thermal expansion on a multi-segment valve design; an analytical model that determines fastener and component loading and stresses; time-dependent viscous friction effects on valve torque; fluid system components for nuclear power plant service to assure conformance to ASME Boiler and Pressure Vessel Code and other international codes and regulations.

His industry background and interest in engineering enables him to be able to teach a wide range of courses. "I think there is significant synergy in teaching and engineering practice: Being able to draw on so many actual engineering experiences is of great benefit in the classroom, and being able to have engineering science and theory fresh in my mind as a challenging problem is approached on the job was so helpful," he said.

Although the professor of practice role affords less time for research activity, Professor Gallagher's research interests include helmet and other sport-related protective gear energy absorption improvement, energy conservation and sustainability and vehicle dynamics.

Professor Gallagher serves as an academic advisor and is beginning work as the ABET coordinator for the mechanical engineering department.

"My approach to teaching is that each student be given every opportunity to succeed. This opportunity will be fair, and of the necessary rigor to meet the requirements of our engineering programs and to fully prepare the student to develop into a successful and contributing engineer," said Professor Gallagher. "More generally, as educators, we understand the high value of learning. How it can open our lives to something more, how it enables us to more fully understand and appreciate the world around us (and beyond). When we are able to impart an interest in learning to our students, I believe we are going a long way toward accomplishing the goal of our University."



Moncef Tayahi

ASSOCIATE PROFESSOR OF PRACTICE

Department of Electrical Engineering and Computer Science

DR. MONCEF TAYAHi joined the Department of Electrical Engineering and Computer Science at Cleveland State University in the fall of 2017 as an associate professor of practice.

Dr. Tayahi received the Ph.D. degree in electrical engineering from the University of Connecticut, Storrs in 2000. He also received a bachelor's degree in electrical and computer engineering from the University of Illinois at Urbana-Champaign in 1995.

Before joining Cleveland State University, Dr. Tayahi was an associate professor at the Xi'an Jiaotong-Liverpool University in Suzhou, China, an assistant professor at Rutgers University for three years and at the University of Nevada, Reno for three and a half years.

Dr. Tayahi's research and teaching interests are in the areas of electrical and computer engineering, focusing on photonic devices and systems, sensor devices and systems, wireless sensor networks, power electronics and their application in renewable energy.

Prior to academia, he was a member of the technical staff at the Advanced Research Laboratory at Bell Labs in Holmdel, New Jersey, for four years. While there, Dr. Tayahi worked on forward looking research in long haul fiber optic transmission systems and devices for dense wavelength division multiplexing at 40 Gb/s and 10 Gb/s (> 5000 Km).

One of Dr. Tayahi's favorite quotes is as follows: "Tell me and I forget, teach me and I may remember, involve me and I learn." — Benjamin Franklin

"My philosophy as a teacher is to instill in students the ability to truly integrate theoretical concepts into practical and useful engineering solutions. Without practical applications, theories are interesting but have limited value. Without theories, the ability to practice engineering is severely limited by the inability to innovate. Teachers that involved me in the learning process greatly affected my journey in life."

MY PHILOSOPHY AS A TEACHER IS TO INSTILL

IN STUDENTS THE ABILITY TO TRULY INTEGRATE

THEORETICAL CONCEPTS INTO PRACTICAL

AND USEFUL ENGINEERING SOLUTIONS.





FACULTY



Bogdan Kozul

ASSISTANT PROFESSOR OF PRACTICE

Department of Mechanical Engineering

BOGDAN KOZUL JOINED the Washkewicz College of Engineering faculty as an assistant professor of practice for the 2018-19 academic year.

Professor Kozul was previously the group manager of technical training at Parker Hannifin. He holds a BSME from Cleveland State University and an MBA from Case Western Reserve University.

He started his career at BFGoodrich, where he supported engineering, operations and production of landing gear for military and commercial applications. Prior to managing technical training at Parker Hannifin, Professor Kozul served as an applications engineer, facilitating the selection and integration of high performance electrohydraulic components and systems.

Professor Kozul is designing the Parker Hannifin Motion Control Laboratory in Washkewicz Hall to provide students with the skills needed to innovate, design and build the motion control systems used in manufacturing, automation, aerospace, construction and marine applications. His focus is to align students with technical leaders in industry by providing solutions for the world's greatest engineering challenges. He encourages students to work in teams and manage their design projects or conduct research on trending technologies in motion control applications. This experience reinforces the theory from engineering courses and assists students in finding career opportunities that resonate with their intellectual curiosity. Industrial partners support students with design expertise along with the hardware, software and controls used by thousands of the leading engineering companies across the globe.

**PROFESSOR KOZUL IS DESIGNING THE PARKER HANNIFIN
MOTION CONTROL LABORATORY IN WASHKEWICZ HALL TO
PROVIDE STUDENTS WITH THE SKILLS NEEDED TO INNOVATE,
DESIGN AND BUILD THE MOTION CONTROL SYSTEMS
USED IN MANUFACTURING, AUTOMATION, AEROSPACE,
CONSTRUCTION AND MARINE APPLICATIONS.**



Chris Wirth



Eric Schearer

ACCOMPLISHED RESEARCH

Two engineering professors earn prestigious National Science Foundation Award.

TWO CLEVELAND STATE UNIVERSITY faculty members have been selected to receive one of the National Science Foundation's most prestigious honors. Engineering professors **Eric Schearer** and **Chris Wirth** have both been named winners of the CAREER Award, the highest recognition NSF gives to early-career faculty. The awards include a multi-year grant to be used to advance innovative research, while also providing mentoring and training to assist in developing the next generation of higher education leaders.

"The NSF CAREER program is highly competitive and only awarded to the top early-career researchers in the nation," said Dr. Ronald M. Berkman, then president of Cleveland State University. "This announcement exemplifies the excellence and dedication of our faculty, and I would like to personally congratulate Professors Schearer and Wirth for this tremendous accomplishment."

"This recognition from NSF also highlights the growth and increased national prominence of CSU's overall research enterprise," added Dr. Jerzy Sawicki, vice president for research at Cleveland State. "Drs. Schearer and Wirth are both conducting novel research that will have significant positive impacts for our region and society as a whole, and these awards will greatly expand their efforts."

Professor Schearer, an assistant professor of mechanical engineering, will work to develop a functional electrical stimulation (FES) system for neuroprosthetic devices. The technology will better control muscle stimulation to restore reaching movements for people with paralyzed arms due to spinal cord injuries. Additionally, it will also allow a non-expert to update FES settings based on muscle development and the needs of the patient. The project will also include the creation of an empathy training program for rehabilitation engineers to improve understanding of the needs of people with paralysis and other

“THE NSF CAREER PROGRAM IS HIGHLY COMPETITIVE AND ONLY AWARDED TO THE TOP EARLY-CAREER RESEARCHERS IN THE NATION. THIS ANNOUNCEMENT EXEMPLIFIES THE EXCELLENCE AND DEDICATION OF OUR FACULTY, AND I WOULD LIKE TO PERSONALLY CONGRATULATE PROFESSORS SCHEARER AND WIRTH FOR THIS TREMENDOUS ACCOMPLISHMENT.”

DR. RONALD M. BERKMAN | THEN PRESIDENT OF CLEVELAND STATE UNIVERSITY

disabilities. He will receive \$550,000 for the five-year project.

“The continued expansion of assistive devices requires both improved technology and enhanced training for engineers,” said Professor Schearer. “This project will seek to meet both of these goals by developing novel FES applications to improve the usefulness of neuroprostheses, while also increasing empathy among engineers which will improve the design and ultimate use of the devices they create.”

Professor Wirth, an assistant professor of chemical and biomedical engineering, will lead a project to better measure the motions and forces that arise in a concentrated suspension of nanoparticles. The research seeks to transform our understanding of how nanoparticles of complex shape or surface chemistry interact during the processing of coatings, production of complex fluids and in synthetic and biological active colloids. He will receive \$500,000 for the five-year effort.

“The continued advancement of the coatings and advanced materials industries requires better

measurement of these novel nanoparticles and better understanding of how they interact and impact microstructure formation,” Professor Wirth said. “This research will utilize innovative imaging technology to provide more accurate analysis and ultimately lead to the development of more efficient production techniques.”

“Eric and Chris are tremendous researchers, engineers and educators,” noted Dr. Anette M. Karlsson, dean of the Washkewicz College of Engineering at CSU. “Eric’s work will be essential to improving the quality of assistive devices for individuals with paralysis and other disabilities, while Chris’ efforts will enhance applications for nanotechnology which will be essential to advances in numerous fields from manufacturing to energy to medicine.”

The Faculty Early Career Development Program was created by the National Science Foundation in 1994. It honors individuals who are working on cutting-edge scholarships with significant societal impact who also have the potential to serve as academic role models in research and education in their institutions and nationally.

Faculty Promotions

The following faculty member received promotions effective for the 2018-19 academic year:



Dr. Moo-Yeal Lee

from Assistant Professor to Associate Professor, Department of Chemical and Biomedical Engineering

Faculty Retirements

The following faculty members retired after the completion of the 2017-18 academic year:



Dr. Charles Alexander

Professor, Department of Electrical Engineering and Computer Science



Dr. Taysir Nayfeh

Associate Professor, Department of Mechanical Engineering

MORE ONLINE → For more information about the program, visit <https://bit.ly/2ynhCxK>.



Top HONORS

In May of 2018, Matthew Martis graduated as the Washkewicz College of Engineering's Valedictorian and Cleveland State University's Co-Valedictorian with a Bachelor of Electrical Engineering.

MATTHEW MARTIS BEGAN HIS SEARCH for the right university to call home during his senior year of high school — Cleveland State was one of many choices. He initially chose The Ohio State University, but soon after beginning his first semester, he realized it was not the right fit.

His mom had graduated from CSU in the 1980s, and it was affordable and close to home. "I never would have thought that CSU could change my life in so many ways," said Martis.

"Once at Cleveland State, I encountered a variety of people, backgrounds and cultures. I was amazed by this and started to think about ways I could further expand my horizons. I wanted to learn as much as possible," he explained.

He sought out ways to be involved in as many areas so he could learn as much as possible in four years.

He went from being uninvolved in campus life at OSU to an extremely involved student at CSU. During his time at CSU, he was an Honors College student, vice president of Viking Expeditions, a presidential student ambassador in the 1964 Society and the chairman of the Board of Elections. Additionally, he was a member of Phi Sigma Pi national Honor Fraternity, the National Society of Leadership and Success, Golden Key National Honor Society, Tau Beta Pi and the Institute of Electrical and Electronics Engineers (IEEE).

Out of all of his involvement, he credits Viking Expeditions for becoming more involved on campus and encouraging him to be a better individual. Viking Expeditions is the premier service organization on campus, offering dozens of volunteer opportunities every semester as well as organizing alternative break trips for CSU students. He took his first alternative break trip in the summer of 2016, where he learned what it meant to serve others and to give of one's time and talent without expecting anything in return. "I wanted to keep giving myself to others, and that is what drove me to become an extremely involved student," Martis says.

In May of 2016, Martis swore to support and defend the Constitution of the United States against all enemies, foreign and domestic, as a member of the U.S. Air Force in the Technical Degree Sponsorship Program (TDSP), which only accepts 25 people out of hundreds of applicants each year. "I was formally processed in September and am extremely honored and humbled to have this opportunity to defend and guard the land which has given me the freedoms that has allowed me to flourish," said Martis.

He started officer training school upon graduation.



“MY TIME AT CLEVELAND STATE UNIVERSITY HAS

TRANSFORMED ME BEYOND MY WILDEST EXPECTATIONS.

MY PASSIONS FOR SERVING OTHERS AND LEADING

MY PEERS HAVE NEVER BEEN STRONGER.”



Winning BIG

The annual Startup Vikes event provides resources to several viable startups.

THE FIFTH ANNUAL STARTUP VIKES event was held in tandem with the inaugural Global Legal Hackathon Friday, February 23, through Sunday, February 25, in the Student Center. Startup Vikes provides participants with a crash course in how to develop a business, and awards top finishers with prizes and business training that will help them turn their plans into working companies.

Startup Vikes awarded the top three companies created during the weekend with prizes and cash infusion packages. The winning businesses were ReCap (\$2,000), Garage Founder (\$1,000) and InSpirit (\$500).

ReCap seeks to solve the problem of patient access and compliance with physical therapy. Through the practice of wearable clothing that will send data to patients, physicians and physical therapists, ReCap will not only focus on the wearable pieces, but will also develop the apps that patients, physicians and physical therapists use. Christopher Schroek, a mechanical engineering graduate student, pitched the idea. Two additional

Washkewicz College of Engineering students joined Schroek and four other CSU students to form the business.

Garage Founder focuses on the issues that entrepreneurs and startups have when finding commercial space for their business. Commercial real estate has become increasingly complex. The company seeks to be the Airbnb for entrepreneurs and startups seeking different types of spaces.

InSpirit aims to provide a medical device and system to detect dehydration in nursing homes.

Among the 150-plus participants were students from Cleveland State University and four other local universities as well as numerous business leaders and community members. More than 40 mentors and presenters provided help, guidance and resources throughout the weekend, ranging from strategy, branding and marketing to sales, financial, legal, design services and manufacturing, among others.



BEST POSTER AWARDS

FIRST PLACE

Toward Minimal-Sensing Activity Mode Recognition for Transfemoral Amputees

by Hanieh Mohammadi, Gholamreza Khademi and Dan Simon

Department of Electrical Engineering and Computer Science

SECOND PLACE

US EPA Transform Tox Testing Challenge: 384-Pillar Plate for Assessing Metabolism-Induced Toxicity With 3-D Printed Cells

by Kyeong-Nam Yu, Soo-Yeon Kang, Pranav Joshi and Moo-Yeal Lee

Department of Chemical and Biomedical Engineering

THIRD PLACE

Nonlinear Tracking Control of an Antagonistic Muscle Pair Actuated System

by Holly Warner, Hanz Richter and Antonie van den Bogert

Department of Mechanical Engineering

HONORABLE MENTIONS

Quantifying 3-D Cell Migration on a High-Throughput Microwell Chip Platform

by Stephen Hong, Sean Yu, Alexander Roth, Yana Sichkar and Moo-Yeal Lee

Department of Chemical and Biomedical Engineering

Virtual Muscle Reflex Control and Impedance Control in Describing Perturbed Walking

by Sandra K. Hnat and Antonie van den Bogert

Department of Mechanical Engineering

RESEARCH DAY

2017 WASHKEWICZ COLLEGE OF ENGINEERING

The Washkewicz College of Engineering held its Annual Research Day on October 27, 2017. The keynote speaker, **Dr. D. Geoffrey Vince**, the Virginia Lois Kennedy Chair in Biomedical Engineering and Applied Therapeutics and chair of the Department of Biomedical Engineering at the Lerner Research Institute at the Cleveland Clinic, gave a presentation related to his research and innovation career at the Clinic and in industry.

50 number poster presentations this year — a Washkewicz College of Engineering record.



STUDENTS



The Dan T. Moore MakerSpace welcomes new manager

Matthew Johnson is the new Dan T. Moore MakerSpace manager. Johnson and his family moved to Cleveland Heights from Dallas, Texas, because of the summers and the schools. With his wife earning a Ph.D., a daughter at John Carroll University and his son at CSU, the whole family “goes to school.”

Johnson was a high school principal for 15 years in Cincinnati and comes to CSU after being at IBM. He is a Georgia Tech alum happily married to Becki, a University of Georgia educator — proof that real love exists.

ADVANCED LEARNING

The opening of the Dan T. Moore MakerSpace will enhance engaged learning opportunities for students.

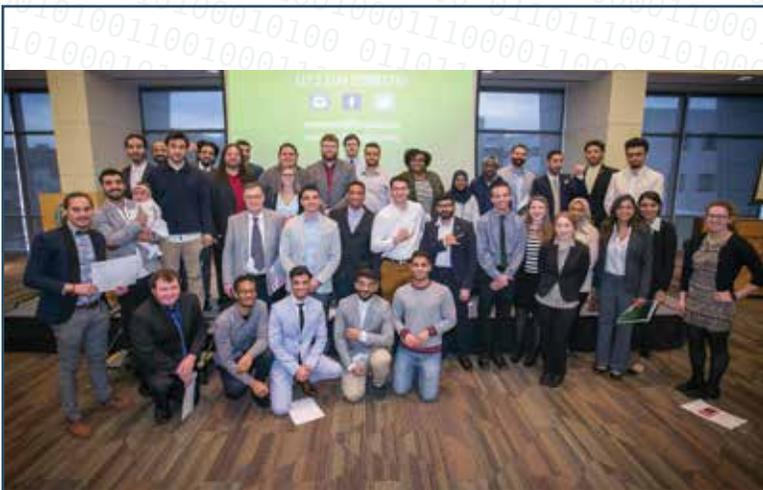
THE WASHKEWICZ COLLEGE OF ENGINEERING dedicated the Dan T. Moore MakerSpace, which was funded by a generous gift from Dan T. Moore, on Tuesday, October 23, 2018. The MakerSpace is intended to enhance engaged learning opportunities for engineering students.

The 6,400-square-foot facility consists of an open laboratory space, providing students with access to the latest prototyping and fabrication technology to assist in transforming ideas into practical applications. The MakerSpace houses high-resolution, 3-D printers and scanners, computer-aided manufacturing (CAM) equipment, digital fabrication tools, laser engraving and cutting machines and tools for testing and designing electronic devices.

“I am proud to make this gift to help create a space where CSU students, faculty and the community can develop their innovations,” said Dan T. Moore. “It is my hope that this MakerSpace will fuel a culture of creativity and entrepreneurship that pervades the entire CSU campus.”

“The Dan T. Moore MakerSpace will provide an interdisciplinary, hands-on engineering education beyond the classroom in a collaborative, team environment,” noted Dean Anette M. Karlsson. “It will greatly strengthen the College’s core undergraduate courses in design and experimentation, providing opportunities for industry and alumni involvement and continuing the College’s legacy of developing ‘Ready-to-Go Engineers.’”

Moore has served on the CSU Board of Trustees since 2008 as well as the Development and Engagement Committee. An industrialist and entrepreneur, he has been starting businesses as president of the Dan T. Moore Co. since 1979. He currently serves as chairperson of eight companies, each with its own proprietary edge.



Memorable EXPERIENCES

Engineering and computer science students take ethics pledge.

ON APRIL 5, 2018, THE WASHKEWICZ COLLEGE OF ENGINEERING hosted the Order of the Engineer and the Pledge of the Computing Professional. The Pledge of the Computing Professional is an organization that promotes the notion of computing as a recognized profession at the time of graduation for students in computer science and related programs. It is intended to promote and recognize the ethical and moral behavior of graduates of computing-related degree programs as they transition to careers of service to society.

The Order of the Engineer ceremony in the United States was first held at Cleveland State University in the Washkewicz (then Fenn) College of Engineering on June 4, 1970. Since then, several other engineering colleges throughout the United States have adopted the ceremony. Ring ceremonies are conducted by Links (local sections) of the Order. There are currently 189 Links in the United States, and Washkewicz College is Link 1.

Over 120 students participated in the ceremony this past year and received either the Order of Engineering Steel Ring or the Pledge of the Computing Professional Pin.

In 2020, the College will celebrate the 50th Anniversary of the Order of the Engineer and the founding of the First Link at Fenn College in 1970.



STUDENTS

GETTING INVOLVED

Learn more about three organizations within the Washkewicz College of Engineering.



AICHE

The American Institute of Chemical Engineers (AIChE) is a professional organization for chemical engineers. AIChE was established in 1908 to distinguish chemical engineers as a profession independent of chemists and mechanical engineers.

As of 2018, AIChE had over 60,000 members from over 110 countries worldwide. The student chapter at CSU focuses on providing networking opportunities in both academia and industry as well as increasing student involvement locally and nationally.

This past year AIChE at CSU hosted two Department of Chemical and Biomedical Engineering faculty members, Dr. Moo-Yeal Lee and Dr. Chandra Kothapalli, to present their research. These kinds of presentations provide an opportunity for members to meet and network with faculty members as well as better understand the type of research that is being conducted within the College.

If you are interested in engaging with the group, please contact them: csuohio.alche@gmail.com.



NSBE

The National Society of Black Engineers (NSBE) is a nonprofit national organization that strives to increase the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community.

We welcome all engineering students to be a part of our mission and family. This past year we were involved in several professional, social and community events.

We collaborated with Case Western Reserve University's chapter to assist with NSBE Jr. for high school students, hosted a resume workshop at CSU and we attended the National Conference in Pittsburgh.

While at the latter event, our chapter attended a career fair with over 200 recruiters from colleges and the engineering industry. There were also countless opportunities to network and workshops for everything from managing your life to leadership and success. Many students received interviews and job offers while the conference was still in progress.

For more information on how to get involved with NSBE, visit nsbe.org.



SAE

Students in the Society of Automotive Engineers (SAE) are tasked with designing and building a single-seat, all-terrain sporting vehicle that is to be a prototype for a reliable, maintainable, ergonomic and economic production vehicle that serves a recreational user market. Students must function as a team to design, engineer, build, test, promote and compete with a vehicle within the limits of the rules. Due to the extreme cost associated with the fabrication and design of the car, the organization hosts fundraisers each year to use for supplies and travel.

During the 2017-18 season, the team fabricated a brand new Baja car and competed in three collegiate competitions held in Maryland, Kansas and Oregon.

The team placed 10th out of 100 teams from all over the world in Kansas, their first top 10 finish in the modern era of Baja at CSU, and hope to continue their tremendous success in the upcoming racing season.

To support SAE's efforts, please contact Tyler Vegh, president, at csuohiosae@gmail.com.



MAKING COLLEGE

POSSIBLE

OUR ALUMNI LOVE US. This is proven time and time again through the generous donations from individuals and industry leaders in the form of scholarship dollars. Each year we give out more and more money to students — this year we are approaching \$800,000. Every dollar helps, and our students are grateful for the tuition help.

College can be expensive and scholarships help to defray that cost and allow for other opportunities for students to engage their learning. For example, our Washkewicz Scholars have either worked, interned or are currently employed by Parker Hannifin Corporation. Our Lincoln Electric Scholars are receiving a tuition scholarship and an internship opportunity in the summer. Ohio Space Grant Consortium scholarship winners have interned at NASA. The list goes on.

Many of our awardees have scholarships that help with housing costs in addition to tuition. The Richard L. Bowen & Associates and the Rebecca Bompiedi On-Campus Residency awards allow our students to live on campus and be close to the resources we have available.

There are many other awards from donors (large and small), they all help make this experience possible and the students are incredibly thankful.

STUDENT-ATHLETES

When you think of an engineering student, you might have an ideal that comes to mind, a stereotype if you will. Well, these students will blow that ideal out the window. The College of Engineering is home to many student athletes. These students — many of whom have grade point averages above 3.0 — excel in the classroom and on the field. We are proud to call them Vikings and future engineers.

"Earning the scholarship meant that I had learned soft skills necessary for a future career in engineering, which is something I take pride in. I am very proud of the scholarship and it has helped me with post-graduation finances. The scholarship is extremely generous and critical to graduating on time.

I currently work as an electrical engineering intern at Heapy Engineering, and plan to stay there after graduation. I have earned an excellent opportunity to learn and grow as an engineer, and I appreciate everything CSU has offered to get me to the position I am in."

Jake Richey

"Receiving the scholarship was really just taking some weight off my chest. Knowing that I could save a little more money now really helps me keep a level head and allows me to stay focused on my studies.

After graduating, I hope to get a full time job somewhere in the Cleveland area. ***I have had some diverse summer job experiences, and those jobs have given me insight into what I want from a job.*** Since CSU has the 4+1 degree, I will have a year done with my Master's degree, so hopefully I will be able to complete that along with a full time job."

Dominick Rongone



STUDENTS



GRADUATE AWARDS

The College of Graduate Studies announced the recipients of the Fall Graduate Student Awards Program. Six of the 20 award winners were from the College of Engineering. Award winners were selected in categories of research and creative scholarship, thesis and dissertation, teaching and engagement and social advocacy. Award recipients received monetary prizes and formal recognition during the College of Graduate Studies Awards Reception in May of 2018. Over 75 graduate students participated, making this the largest awards program in its three-year history.

2017-2018 GRADUATE SCHOLARSHIPS

| RECIPIENT | COLLEGE | AWARD | CATEGORY |
|------------------------------------|-------------|---|-----------------------------------|
| Aldian Rinehart | Engineering | Outstanding Research – Creative Scholarship | Natural Science/ Engineering/Math |
| Seyed Fakoorian | Engineering | Outstanding Research – Thesis | Natural Science/ Engineering/Math |
| Jyotsna Joshi | Engineering | Outstanding Research – Dissertation | Natural Science/ Engineering/Math |
| Jodi Turk | Engineering | Outstanding Teaching Assistant | |
| Gholamreza Khademi | Engineering | Excellent Research – Creative Scholarship | Natural Science/ Engineering/Math |
| Humberto Jose De Las Casas Zolezzi | Engineering | Excellent Research – Thesis | Natural Science/ Engineering/Math |



STUDENT ACCOLADE



Graduating senior wins NSF fellowship

Congratulations to **Kyra Rudy**, a graduating senior in the Department of Mechanical Engineering, for her recent Graduate Research Fellowship Program (GRFP) award from the National Science Foundation. The GRFP provides three years of support for the graduate education of individuals who demonstrate potential for significant research achievements in STEM or STEM education.

Rudy has been a prolific researcher at CSU, including two summers working on Undergraduate Summer Research Award projects in 2016 and 2017, and an Undergraduate Research Award project in 2018. All were performed under the guidance of Dr. Eric Schearer, an assistant professor in mechanical engineering.

KEY POINTS

Students compete in the College of Graduate Studies' Three-Minute Thesis Competition.

GRADUATE STUDENTS COMPETED in the College of Graduate Studies' Three-Minute Thesis competition on February 28, 2018. Students participate in the annual competition to sharpen their presentation skills and to build the attention of diverse audiences to promote their research.

First place winner Rakshit Shah earned the College of Graduate Studies Outstanding Award. The applied biomedical engineering doctoral student proceeded to the Midwest Association of Graduate Schools 3MT Competition in Grand Rapids, Michigan, to compete with peers from more than 60 colleges and universities. "The 3MT experience has assisted me to reach a level where I am able to explain a bigger picture in a simple language. I knew this competition would enhance my intellectual and presentation skills," Shah stated.

Alex Roth, doctoral candidate in chemical engineering, received the Award of Excellence and viewed the competition as a great way to get others excited about research. "I wanted to be able to convey the work that I've performed on cancer cell migration in a way that was palatable to people outside of science. Being able to convey

the message of your research to a wide audience is not emphasized during doctoral studies and the 3MT helps fill the oft overlooked hole," he said.

Both winners received monetary prizes and were recognized in the College of Graduate Studies awards program in May.

The 2018 panel of judges included Diane Kolosionek, head, research and liaison services, Michael Schwartz Library; Vickie Gallagher, associate professor, Monte Ahuja College of Business; and Shilpa Kedar, program director, Cleveland Foundation.

Leading up to the competition, interested students participated in a 3MT training workshop and created their own three-minute thesis video.



— *Out of this* — WORLD

A partnership between CSU and NASA advances space science and exploration for students.

Andrew Wimmer helped develop novel, high-temperature, nickel-based super alloys for use in future aerospace applications. Melanie Brunner assisted in the administration of a comprehensive database for national and international oversight of radio spectrum use. Santino Bianco got to work on the concept design for an improved lander for surface exploration missions to Venus.

ALL THREE WERE PART OF CSU'S longstanding cooperative education and internship program with NASA's John H. Glenn Research Center at Lewis Field in Cleveland. The program places CSU students in various research and business divisions at NASA Glenn, which is one of the agency's central science and engineering laboratories. Students get an incredible engaged learning experience, which gives them an opportunity to literally shape history, while also getting a tremendous boost in carving out a career path.

"I never would have guessed that I would have the opportunity to help work on a space mission to Venus," Bianco said. "And this was not a normal internship. I got to work on design specifications and analysis for the lander and attended an international meeting, where data I helped create was presented. It really is mind blowing."

During her internship at NASA Glenn's Spectrum Management Office, Brunner was tasked with cleaning up and improving the

management of a database of regulatory approvals for radio spectrum use. She was given tremendous freedom by her supervisors to assist in the development and implementation of procedures for improving the database, and was ultimately hired as a NASA contractor following graduation to continue development and oversight of the system.

"Engineering and science are hands-on disciplines which require significant experiential education to augment what our students learn in the classroom," added Anette M. Karlsson, dean of the Washkewicz College of Engineering. "Our collaboration with NASA Glenn is a perfect example of how students can gain the skills they need, learn more about the field they want to enter after graduation and have some truly memorable experiences."

The CSU/NASA collaboration actually began before either entity technically existed. The predecessor of Cleveland State, Fenn College, developed a student co-op program for engineering



Santino Bianco



students in the years after World War II with what was then the National Advisory Committee for Aeronautics. Today, the effort has grown to include co-op and internship opportunities for students in nearly every major on campus.

In addition, the two institutions conduct multiple joint research initiatives and educational collaborations, including opportunities for NASA engineers, scientists and managers to serve as adjunct faculty on campus and for faculty to serve as staff researchers at NASA Glenn. CSU also produces an annual economic impact study to highlight the tremendous positive effect NASA Glenn has on Northeast Ohio.

"As the space race began, NASA was in need of significant technical expertise and workforce assistance. Fenn College, and later CSU, was perfectly positioned to assist, given its focus on applied research and experiential learning," said Julian Earls, former director of NASA Glenn, who currently serves as the special advisor to President Harlan M. Sands.

"This teamwork has been incredibly beneficial to both entities, providing NASA with a talented workforce and needed training and research assistance, while serving as one of the key building blocks for CSU's innovative and nationally recognized engaged learning model of higher education," Earls said.

The success of the collaboration can also be seen through the ever growing list of CSU alumni who now serve in key leadership positions throughout NASA. This includes Roger C. Forsgren, director of NASA's Academy of Program/Project and Engineering



Andrew Wimmer

Leadership (APPEL); Jason Crusan, director of Advanced Exploration Systems; Robyn N. Gordon, director of NASA Glenn's Center Operations Directorate; and Robert F. Lasalvia, chief of the Office of Education at NASA Glenn.

"CSU and NASA have very similar cultures, educationally speaking. They both are really helpful in providing the necessary tools for interns to 'hit the ground running' to get as much out of the experience as possible," said Wimmer, whose 15-week internship was ultimately extended to a part-time contract thanks to his central role in the implementation of 3-D printing technology in the design and development of nickel-based super alloy parts for use in future aircraft.

"The benefits of participating in a program like this can't be overstated," he added. "I would encourage all students to take advantage of this incredible opportunity."



EDUCATIONAL SUCCESS

The Engineering Student Success Scholars program helps individuals succeed.



THE “BEST PRACTICE” INITIATIVE, funded through a generous donation from Parker Hannifin Corp., will help to support underrepresented and first-generation students in engineering and computer science gain a comprehensive appreciation for all engineering fields in order to make better informed career choices. The Engineering Student Success Scholars program is based on a cohort model and will focus on comprehensive academic advising and intensive career counseling, making sure to connect students to the necessary resources to complete their education.

Over a week in August, the cohort of ESS Scholars met to speed date their majors, participate in some hands-on activities, work with success coaches to more efficiently time manage, get some tips on test taking and start the career conversation with the Center for Engineering Experiential Learning. The week concluded with a field trip to Lincoln Electric and their state-of-the-art welding facility.

The week provided a true cohort experience and many of the scholars were able to adjust their schedules to take the same sections of courses together. Over the fall and spring terms, the ESS Scholars will get together at least twice with their college mentor and will participate in ongoing college activities as a cohort.





Attracting Women ENGINEERS

Fenn Academy has created two new programs to attract more female students.

ACCORDING TO NATIONAL RESEARCH done by the Society of Women Engineers (SWE), while interest in engineering majors is growing among female high school students, it is still remarkably low compared to their male counterparts. In 2014, 27 percent of male high school students indicated an interest in majoring in engineering in college, as opposed to only 8 percent of female students.

Fenn Academy has placed an emphasis on the recruitment of female students and piloted two new events this past year: Women Exploring Engineering and the Pathways to Engineering after-school program. Hannah Milgrom, coordinator of engineering student programs and recruitment, has led both of these efforts.

The 2017 Women Exploring Engineering event was a one-day program that was held on Saturday, September 23, in the CSU Student Center Ballroom. The event welcomed over 50 female students from high schools across the region, including New Tech East High School, Valley Forge High School, Horizon Science Academy and Stow-Munroe Falls High School. Students participated in a half-day of activities, which included lab

tours, a hands-on Rube Goldberg competition and talks by professional female engineers. Parents who came to the event were able to attend a panel with alumni and industry professionals. At the time of the event, Washkewicz Hall was still under construction so building company Gilbane generously led tours through the construction site for parents and students. According to a survey given at the end of the event, a majority of participants indicated they would recommend the program to a friend. Due to the positive response, a 2018 Women Exploring Engineering day was held Monday, October 29.

Pathways to Engineering is an after-school program created in partnership with Exploring, a career development program run by the Boy Scouts of America. In the spring of 2018, this all-female, 6-week program was held for approximately 20 students in grades 4-12. Attendees heard from professors and industry professionals alike and participated in weekly hands-on competitions. After receiving outstanding feedback, Fenn Academy decided to run this program in both the fall and spring of the upcoming academic year. It is our hope that through these continued efforts, we will increase our female enrollment.



FENN ACADEMY ACTIVITIES ATTRACT STUDENTS TO ENGINEERING FIELD

ONE OF THE UNIVERSITY'S little-known campus secrets is probably not a secret to most of northeastern Ohio's middle and high schools: Fenn Academy.

This partnership program to encourage young students to pursue an engineering degree, and ideally attend Cleveland State, now has 71 partners in six counties across the state.

The program allows participating schools to use university facilities, consult with Washkewicz College faculty and work on collaborative projects with Fenn Academy member teachers, counselors and more.

An outgrowth of internal discussions to develop more effective recruitment efforts to the College of Engineering, Fenn Academy started with one high school partner in 2005, Lakewood High School. The program has quickly grown.

A college counselor from Horizon Science Academy, a current partner of Fenn Academy, shared their experience in Fenn Academy's 2016-17 Highlights report.

"Thank you very much for your warm welcoming, amazing program, delicious breakfast and lunch, and dedicated staff, students, and professors. My students, I and my colleague were very impressed by yesterday's program. It was a very useful, beneficial, fun and exciting program. One more time thank you for offering this program

to our students," the counselor said.

Annually, from October through April, the university encourages partner schools to schedule visits and participate in nearly 30 Engineering Activity Days. Students arrive at the College of Engineering in groups ranging from 10 to 40 for half of their school day, to take part in various STEM-related activities. The program also provides busing and meals.

"It's a great way to connect with schools, especially those with STEM programs, to show them what we have to offer here at Cleveland State and to encourage them to explore the field of engineering," said Gregg G. Schoof, manager of engineering student programs and associate director of Fenn Academy.

Not every participating school has a pre-established STEM program, so it can serve as an introduction into the varying fields of engineering.

"[Participating schools] might bring a math or physics class or a student group with an entry point into engineering but maybe they're not super knowledgeable about what the field is and what they can do with it," said Hannah Milgrom, coordinator of engineering student programs and recruitment. "We try to meet

them where they're at."

Other efforts to bridge the relationship between the college and partnering schools include small grants for teachers to create engineering competitions or projects, joint proposals to acquire funding for engineering related educational initiatives, summer camp activities for students or teachers when funding is available and participation with the Engineer-For-A-Day job shadowing program at local engineering organizations.

More than 80 students registered to shadow an engineer at one of 26 different companies for this year's Engineer-For-A-Day job shadowing program, the first part occurred on Feb. 17. For the other half of the program, students spend an entire school day shadowing their match based on their interests in the field.

"In order for students to get their job-shadowing match, they have to come to campus and hear more about the college, which is where we do the recruitment piece of it, and then we open up the labs so they get to learn a little bit more about engineering," Milgrom said. "At the end of the two-and-a-half hours, they get their job assignment, and they have a week to contact their company and figure out the details for their [job-shadowing] day."

More than 1,300 students have gone through this program since Fenn Academy took over the event from the Cleveland Engineering

Society. Many students, often accompanied by parents, continue to participate every year prior to their high school graduation.

“Parents show up for pretty much everything, and impressing the parents is such an important part of recruitment,” Milgrom said. “They hold a lot of influence.”

The college’s enrollment has recently increased, though Fenn Academy may not be the sole contributor to this rise, some incoming students had participated in the program.

“Enrollment has gone up by about 40 percent in the last five years, and most engineering colleges have had growing enrollment, but we do give a lot of credit to what we’ve been doing to the increase in our enrollment,” Schoof said. “It was partially responsible for the need of this new building, because we were just kind of outgrowing the old building. It’s been really great for us.”

Aside from group event days, students may also seek out the college through the program individually.

“We’ll have individual students come in, maybe just with their parents, to learn more about the college and I try and pair it so that the [college] student who is meeting with them either has the same major as the student that’s interested or they went to the same high school or they are from the same area so that they can create nice friendships,” Milgrom said.

Schoof and Milgrom work to personalize each visit alongside the college’s students, staff and faculty.

“We spend up to two hours with people, we connect them with one of our advisers, and usually with a faculty member who quite often is the department chair of the field that they’re interested in,” Schoof said. “We try to make them feel at home, welcome and comfortable.”

Schools also have a significant role in the process with the formalized partnerships Fenn Academy has, including their individually signed agreements with each middle and high school.

“We really are unique in northeast Ohio, and maybe even in Ohio, in terms of the extent of what we do,” Schoof said. “They’re actually committing their staff to the process as well, and they’re also opening up their school to us so we can go in and work with their kids.”



“IT’S A GREAT WAY TO CONNECT WITH SCHOOLS, ESPECIALLY THOSE WITH STEM PROGRAMS, TO SHOW THEM WHAT WE HAVE TO OFFER HERE AT CLEVELAND STATE.”

GREGG G. SCHOOF

Something new from the program at Beachwood High School includes Dr. Majid Rashidi, professor of mechanical engineering and director of Fenn Academy, who arranged a credit for a class that the students take at their school, so they can take a pre-engineering class and transfer it to Cleveland State. This is set up so that students can earn a high school credit and college credit concurrently, in the form of a College Credit Plus (CCP credit).

“[Students] take the class at Beachwood and get credit for their high school degree and receive college credit through us,” Milgrom said.

Fenn Academy also aims to increase the number of underrepresented students in engineering by hosting multiple “women in engineering” events and is also committed to providing equal opportunities for all students in addition to partnering with diverse schools.

“We’re holding an after school program starting in March that will run for six weeks for an hour and a half [...] of just girls, and every week we cover a different engineering topic. They’ll get to hear from students and faculty, get to see some labs and do hands-on projects,” Milgrom said. “It’s kind of an extended version of one of our high school visits.”

Additionally, coming up in May, 100 fourth and fifth grade Girl Scouts will visit the college for a similar hands-on experience.

To accomplish their growing outreach and ensure a majority of their events are at no cost of the partner schools or students, the college provides a bulk of their budget. They have recently concluded phase one of a fundraising campaign through Cleveland State’s advancement office, which will go out to the college’s alumni, in an effort to raise funds independently.

“In the past we have gotten significant corporate support for our program,” Milgrom said. “Our dean is very supportive of these activities, so she’s willing to put some of the budget towards what we’re doing.”

Sponsors of the Fenn Academy program have included The Ronald R. Ledin Fenn Academy Engineering Education Endowment Fund, Lubrizol Corporation and Lincoln Electric Company, among more than 35 other supporting contributors.

“It’s really a team effort, which is important to note, engineering itself is very team-oriented, so what we do is also very team-oriented,” Schoof said.

Schoof oversaw Fenn Academy semi-independently before bringing Milgrom on to help further their impact on young people and the college. Together they feel they make an excellent team.

“It’s hard work,” Milgrom said. “But we both get a lot of joy out of it.” — *Holly Bland*

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PROGRAM



TEAM EFFORT

Engineering student recruiting assistants are a vital part of attracting prospective students.

THE FENN ACADEMY would not be able to reach out to as many students as it does each year without the help of our fantastic student recruiting assistants (SRA). This group of students works collaboratively under the supervision of Gregg Schoof and Hannah Milgrom to run the 30-plus on- and off-campus activities for prospective students, parents and teachers that the Fenn Academy hosts each year.

In the 2017-18 academic year, there were 11 student recruiting assistants: Elizabeth Akosile, Megan Keleman, Nathaniel Lauer, Nandini Padaraju, Christina Pope, Patrick Schlund, Kyle Stephens, Tim Szeltner, Tyler Vegh, Marcus Wilde and Chloe Zifcak. In addition, Yash Joshi was the fall 2017 Fenn Academy graduate assistant. These individuals were responsible for giving presentations to groups of prospective students and parents. They planned and executed hands-on activities for groups of high school and middle school students and led campus tours. They also met individually with parents and students to discuss prospective student interests.

While the student recruiting assistant job is paid, it is our hope that these students gain skills that will make them competitive in their lives post-college and, in many cases, it has. Kyle Stephens, recent graduate of the Washkewicz College of Engineering, received a full-time offer of employment from Swagelok at the beginning of his senior year. Many other students have held co-ops or internships at companies such as FirstEnergy, the Northeast Ohio

Regional Sewer District, Parker Hannifin and more.

Additionally, the group continues to be successful both within the College of Engineering and throughout the campus at-large. Christina Pope will be president of the National Society of Black Engineers for the 2018-19 academic year. Megan Keleman and Chloe Zifcak will both serve as senators for the College of Engineering within CSU's student government, and Nandini Padaraju was elected as student body secretary. These students make a significant impact on our recruitment efforts. They truly show how successful students can be here at Washkewicz, coming from a variety of diverse backgrounds. Most of all, students enjoy the work.

"Working as an SRA has greatly improved my communication and presentation skills," said Tyler Vegh.

For the 2018-19 academic year, the Fenn Academy is excited to welcome Chris Cajon, Orlando Lopez, Zavier Mclean and Trinity Robinson to the team. Jessica Stange also was hired as the new Fenn Academy graduate assistant. Many of our new hires participated in Fenn Academy events during their time in high school and are excited to be experiencing these events from a new perspective.

The Washkewicz College of Engineering has experienced a continuous increase in enrollment over the past 10 years, and it can be certain that the student recruiting assistants are no small part of that success.



"BEING AN ENGINEER INVOLVES PRESENTING YOUR WORK WITH OTHERS AND MY WORK AS AN SRA HELPED ME TO DEVELOP THIS."

NANDINI PADARAJU



design ENVY

The annual Senior Design Symposium showcased innovative creations by student teams.

A TEAM OF ELECTRICAL ENGINEERING students took first place at the Washkewicz College of Engineering's annual Senior Design Symposium and Awards Dinner for their project entitled "Toy Switch Controller."

Members of the team included Bair Akar, Andrew Gutierrez, Amber Johnson and Taylor Scardelletti. Dr. Zhiqiang Gao, professor of electrical engineering, served as faculty advisor. The project was sponsored by Replay for Kids, an organization that repairs, adapts and distributes toys and assistive devices free of charge to children with disabilities.

An engineering technology team took second place for their autonomous lawn mower project. The scope of the project was to create a safe, efficient, electric, compact device with a robust driving system using Ryobi-based technology. Members of the team included Ethen Barber, Preston Cunningham, John Maxwell and Steve Wyatt. Dr. William Atherton advised the team.

A mechanical engineering group, including Brandon Baker, Nick Boyeas, Matthew Hooper, Donald Jackson, Simran Singh and Mike Willi, earned third place for their Baja SAE car. The group designed and fabricated a new off-road vehicle for 2018 that

will compete against 100 international schools at numerous competitions. The group completed 90 percent of the fabrications by building everything in-house. They saved money and completed the project under budget.

Thanks to donors, the top three teams won cash prizes of \$5,000, \$3,000 and \$2,000, respectively.

The Senior Design Symposium and Awards Dinner is the culmination of the two-semester-long senior design capstone course, where teams of engineering students collaborate with industry members to develop solutions to real-world engineering problems.

The event featured a poster session highlighting more than 50 design projects, a keynote presentation by Pete Buca, vice president of sustainability and innovation at Parker Hannifin Corporation, and the Senior Design Awards Ceremony. The awards ceremony included the recognition of the year's University Valedictorian, Matthew Martis, from the Department of Electrical Engineering and Computer Science, and the salutatorian, Kyra Rudy, from the Department of Mechanical Engineering.



PROGRAM



CENTRAL LOCATION

The new Center for Engineering Experiential Learning Office moves several department operations under one roof.

IN THE SPRING OF 2017, the College of Engineering revamped the Fenn Co-op Office into the Center for Engineering Experiential Learning Office, also known as the CEEL Office. The center encompasses cooperative education, internships, senior design/capstone as well as many industry collaborative initiatives. This revamping created an office that houses all engineering experiential learning in one area since most of engineering experiential learning is academic, meaning credit is involved. The center has three full-time staff, graduate assistants and student workers. Ultimately, this change will provide students with the best possible experience during their time here studying engineering.

The CEEL staff is comprised of Sandra English, senior manager, CEEL; Danielle Vath, manager of external relations and communications; and Annalise Kelleher, engineering co-op coordinator. New programming initiatives that CEEL offers are Fenn Fellows peer mentoring/advising program, alumni/industry mentoring program and global internship/co-op scholarship program. In the Fenn Fellows program, engineering student leaders are selected to work with fellow engineering students on resume and interview skills, reflection and presentation skills, while the

leaders gain project management experience. The mentoring program pairs students with an alumni or industry mentor for either a semester or yearlong experience. The expectation is that the student would develop and grow professionally as well as personally. In today's economy, thinking globally and being exposed to the global industry provides students with invaluable experience. The global internship/co-op scholarship program provides selected students assistance with pursuing these placements. All of these initiatives assist engineering students in becoming "Ready-to-Go-Engineers."

CEEL Co-op Program Highlights

Paid experience

Flexible scheduling

Peer mentoring

Direct contact with engaged faculty

Scholarship opportunities

Academic credit

Employer workshop and seminar opportunities

Certificate of co-op academic completion awarded upon graduation

| CO-OP SEMESTER | BENEFIT UPON COMPLETION |
|-------------------|--|
| 1 Co-op Rotation | Free business cards |
| 2 Co-op Rotations | Fenn Fellows Leadership Program |
| 3 Co-op Rotations | All of the above plus Fenn co-op Scholarship |



Extraordinary TALENT

Sandra English received two prestigious awards in 2018.

2018 ALVAH K. BORMAN AWARD

Earlier this year, Sandra English, senior manager for the Center for Engineering Experiential Learning at Cleveland State University, was awarded the 2018 Alvah K. Borman Award for excellence in cooperative engineering education. The award is given annually by the Cooperative Experiential Education Division of the American Society of Engineering Education and honors individuals who have made a significant contribution to advancing engineering education and experiential learning.

"Sandra English is a national leader in cooperative education, and has played a central role in developing a highly professional, innovative and successful engaged learning environment for engineering students at CSU," said Anette M. Karlsson, dean of the Washkewicz College of Engineering at Cleveland State.

"I am extraordinarily honored to receive this award and would like to thank all of my colleagues in the Washkewicz College of Engineering who have helped make cooperative education a central component of our educational mission," English added.

OCEA EDUCATOR OF THE YEAR

The Ohio Cooperative Education Association, during its recent conference, awarded English the 2018 OCEA Educator Member of the Year Award for her commitment to the professional development of students through effective internships and co-op partnerships.

"I am truly humbled by these honors that I have received this year," English said. "I enjoy assisting students explore their interests through meaningful internship and co-op experiences."

English became manager of the engineering cooperative education program at CSU in 2012. Prior to that she was assistant director of law admission and multicultural recruitment at the Cleveland-Marshall College of Law. English has also served in numerous leadership capacities with ASEE and is currently chair of its Cooperative & Experiential Education Division. English holds a B.A. from Ursuline College as well as a J.D. from the Cleveland-Marshall College of Law and M.P.A. from the Maxine Goodman Levin College of Urban Affairs.

FORMER FENN FELLOWS STUDENT PERSPECTIVE



BRIAN SQUIREK

ELECTRICAL ENGINEERING STUDENT

"Being a mentor for the Fenn Fellows program was an amazing experience. I really enjoyed working with the students and seeing them progress throughout the semester. Even after the program ended, the relationships that were built continued to thrive and many students have stayed in contact with me. This program overall is great for the students and I hope many more will take the opportunity to join the Fenn Fellows program at CSU."



SARAH BOUCHAHINE

CHEMICAL ENGINEERING STUDENT

"Co-oping has been one of the most beneficial and fulfilling parts of my student career. I think it is an extremely important experience for a student to have, in order to make the connections between theoretical knowledge learned in the classroom and practical application in industry. Being a Fenn Fellow mentor has been rewarding because it has allowed me to help other students gain the opportunity to have this experience, as well as gain leadership experience."



PROGRAM

WHERE ARE THEY NOW?

Former Fenn Cooperative Education Program students share their experiences



CLAUDINE LACDAO

*Bachelor of Chemical
Engineering, 2016*

*Master of Science,
Chemical Engineering,
2017*

COOPERATIVE EDUCATION EXPERIENCES

University of Central
Florida, Undergraduate
Research Assistant

Lubrizol Corporation
(4 rotations)

Argonne National
Laboratory

NOW

EMRE Process
Engineer,
ExxonMobil



STEVEN THOMAS

*Bachelor of Mechanical
Engineering, 2018*

COOPERATIVE EDUCATION EXPERIENCES

H.C. Starck

Lubrizol (3 rotations)

NOW

Associate Test Engineer,
Harley-Davidson
Motor Company



WARREN HOOPER

*Bachelor of Electrical
Engineering, 2016*

COOPERATIVE EDUCATION EXPERIENCES

Manitowoc Foodservice

Selas Heat Technology

Powell Industries

NOW

Electrical & Controls
Engineer – Product
Development, Process
Technology



DEURY ESTRELLA

*Bachelor of Science,
Mechanical
Engineering
Technology, 2017*

COOPERATIVE EDUCATION EXPERIENCES

Advanced RV
(3 rotations)

NOW

Field Service
Engineer, Rockwell
Automation



MARC RIEL

*Bachelor of Civil
Engineering, 2015*

COOPERATIVE EDUCATION EXPERIENCE

City of Avon
Lake Engineering
Department

JGD Associates
(3 rotations)

NOW

Project Inspector,
Quality Control
Services



John Hubbard and family at the Distinguished Alumni Awards dinner.

— Distinguished — ALUMNUS

John Hubbard, a 2018 Distinguished Alumni Award recipient, built a successful career founded on a quality CSU education.

JOHN HUBBARD WAS RECOGNIZED with a Distinguished Alumni Award for the Washkewicz College of Engineering for 2018 during the CSU Alumni Association’s annual celebration.

Hubbard, recently retired CEO of Bodycote plc (London Stock Exchange), the world’s largest and most respected heat-treating, hot isostatic pressing, materials testing and metallurgical coatings service company. He graduated from Cleveland State University with a metallurgical engineering degree in 1970 and an MBA in 1973.

Hubbard came to Fenn College from a small town in southeast Ohio. While a student, he began a co-op with Warner & Swasey, who at the time was the second-largest global manufacturer of machine tools. He worked the night shift as a heat treater and held various other positions until his graduation when he was promoted to metallurgical engineer. He soon managed six factories throughout the United States.

While at CSU, Hubbard valued his “blue-collar education” and “pragmatic and applicable” lessons he learned from faculty members who had experience in their field of expertise. He had a particular appreciation for Dr. Andy Gross, his thesis advisor who assisted him with researching

and writing a paper on the future of the machine tool industry. Hubbard’s findings pointed to the increased use of automation and computerization in the future. When he shared his findings with his employer, Warner & Swasey, they did not heed his predictions. Hubbard’s findings proved true in less than 10 years, and Warner & Swasey closed their doors soon after.

Hubbard left Warner & Swasey in 1973 and served as an adjunct faculty member at CSU for a year, teaching advanced statistics and business ethics. Also in 1973, he co-founded his first of three companies in Cleveland, which built custom furnace and control systems for the heat-treating and forging industry.

Hubbard sold his share of the company to his partner in 1976 and became the general manager for Hinderliter Heat Treating in Oklahoma. In 1983, he became the president of Hinderliter, where he grew operations from one factory with less than \$1 million in sales to seven facilities with over \$22 million in sales. After gaining control of the company, Hubbard sold it to Bodycote in 1996, staying on as president of their North American thermal processing unit.

In 2002, Hubbard was named CEO of Bodycote and moved to England to run the company. At the time, Bodycote employed roughly 5,700 people and had turnover of just under \$700 million. Hubbard grew Bodycote to over 11,000 employees and over \$1 billion in turnover by his retirement in April of 2009. His philosophy was simple: “Grow and stretch the company to the bigger and better, while surrounding yourself with competent people.”

Hubbard still works as a resource for Bodycote as part of the succession plan he helped implement before retiring. A model leader, Hubbard is most proud of the opportunity and growth he was able to provide for his employees and the impact he was able to have on them and their families.



PURSUIT OF *Happiness*

Transfer student Nina Vinci discovered her passion while at CSU.

IN HIGH SCHOOL, NINA VINCI enjoyed studying physics, but it would take some detective work before she would decide on her college major. While at West Virginia University, she first studied criminology, but then switched to chemistry. Wanting to be closer to home, Vinci transferred to Cleveland State during her second year after being accepted into CSU's 4+1 program.

At CSU, Vinci joined the American Institute of Chemical Engineers (AIChE). In 2017, she served as president of CSU's AIChE student chapter. Vinci finds professional organizations to be a great boost for students' career goals. "I helped plan an ongoing seminar for students to learn about manufacturing processes at Xellia Pharmaceuticals," said Vinci.

In 2015, Vinci served as an environmental, health and safety intern at De Nora Tech, where she determined what hazards existed in the plant and which personal protective equipment employees should wear in each situation to prevent workplace accidents. She also helped organize and analyze data from completed electro refining trials conducted for a new line of coating materials.

As a quality control 2016 intern for Brewer Company, Vinci conducted lab tests to determine product quality of roofing asphalts as well as to regulate product formulas to ensure they hold up in commercial applications.

This past summer, Vinci landed an internship at Los Alamos National Lab in New Mexico. Her team researched a salt drying process to determine the temperature profile that pulls moisture out of salt at a plant site. This process will be used by the military in storing future stock pilings of nuclear weapons. "Everyone was very welcoming. They held student talks and informational sessions during the workday. It was a great learning opportunity," said Vinci.

Living with ulcerative colitis, Vinci works out to stay in shape and help minimize stress. As head coach at Score More Athletic Club, she teaches sixth graders how to play basketball. At St. Paschal Baylon elementary school in Highland Heights, Vinci teaches young girls how to play



basketball, while encouraging them to do their best both on and off the court.

Because of her own health concerns and partly due to the chemical reactor design course she took with Dr. Marvin Thrash, Vinci sees herself working in the medical field.

"Dr. Thrash shared some stories from when he was working on his master's degree. His mentor had developed an untreatable cancer, so he sought out someone that was doing research on his type of cancer — which saved his life. Because of his educational background, he was able to find a research partner to work towards a cure," said Vinci.

Vinci graduated in May 2018 with a bachelor's in chemical engineering. She is currently pursuing her master's degree and working in a research position with the Cleveland Clinic. But first, there's that June 8, 2019, wedding date....



During his junior year, with his engineering background and his desire to work with prosthetics, working with Dr. Antonie van den Bogert on an entrepreneurial senior design project became a no-brainer. Miller and his team, Rob Moody, Ryan Doris and Donny Grimes, worked on a biomechanics invention originally created by van den Bogert but redesigned to use compressed air. The team pitched the invention to a panel of industry and faculty judges and were the second group to receive funding to support their project.

The project was a passive lower-limb exoskeleton that would deliver torque to the hip joint of the wearer. Someone who has suffered from a stroke, traumatic brain injury or progressive neurological disorder often struggles to “swing” their leg through the gait cycle. Their invention accomplished just that, and, because it was passive, it did so without a battery or external power source.

Miller and his team also participated in Cleveland’s Jump Start program, as well as others, to gain entrepreneurship experience. “The only reason I knew that VFA existed was because the documentary ‘Generation Startup’ was screened on campus during my senior year. During the interview process, my main talking points were my internship with Ford and launching my own startup through the entrepreneurial senior design program. I received this fellowship because of the opportunities and resources that CSU and the Washkewicz College of Engineering provided me.”

The Venture for America program’s expansive application process has a theme of adaptive excellence and includes a general application, essay, interview with a current VFA fellow and selection day, a full day of intensive group and individual interviews. This year over 2,400 recent graduates applied for the program and 180 individuals were accepted.

Miller has been matched with Gayanga, founded in 2016, a Detroit-headquartered construction engineering tech startup, specializing in eco-friendly demolition, as well as infrastructure, related public works and private sector assignments.

LEADING THE WAY

Dan Miller became the first College of Engineering grad to accept a Venture for America Fellow.

AS A RECENT MECHANICAL ENGINEERING GRADUATE, Dan Miller has continued his legacy of entrepreneurship by being the first Washkewicz College of Engineering graduate accepted as a Venture for America Fellow.

Venture for America is a fellowship program that places recent graduates at startups in cities with emerging entrepreneurial ecosystems, forging a community of entrepreneurs committed to building companies that matter.

Miller started his educational journey by completing his associate degree at Cuyahoga Community College with a focus in pre-engineering before beginning his mechanical engineering studies in the Washkewicz College of Engineering. Drawn to mechanical engineering due to his family’s rich military history, he knew that he wanted to help veterans returning home from deployment by designing prosthetics.



INTERNATIONAL GRAD SHARES HIS CSU EXPERIENCE

AFTER I COMPLETED MY SCHOOLING, I was admitted into GITAM University in Hyderabad, India, majoring in electronics and instrumentation. My core interests were in transducers and control systems. In order to pursue my master's in the U.S., I short-listed five top colleges, ultimately selecting Cleveland State University to pursue a master's.

LIFE AT CSU

CSU is a prestigious university. The college has a good reputation and ranking. It has a vast campus located in the heart of the city. The faculty and staff are friendly. There are students from many countries. Indian students are large in number.

Students must study, and attend classes to discuss and clarify doubts. There are a lot of assignments to be done and presentations to be given. Project work is given at the end of the semester. I was a member of International Friendships Inc., which organizes events for international students where we share information about our country, culture and values. The Indian student association at CSU is good. They celebrate all Indian festivals. Other clubs, like the Campus Activities Board (CAB), conduct regular events, including opportunities to see

famous personalities, mock interviews, preparatory tips for jobs and so on.

Since I had made contacts with other college seniors before my arrival in the U.S., it was not difficult to find accommodations. I stayed in an apartment with four students. Our apartment was a stone's throw away from the University, an added advantage during the cold winter days, when the temperature can go down to 8 degrees. Indian foods are easily available, and there are Indian restaurants. Indian festivals also are celebrated by the Indian community. There is a Hindu temple in Parma, which is 13 miles from downtown with regular bus service. The college offers many part-time jobs to students. What impressed me was how Americans respect each other, irrespective of the nature of their jobs.

The U.S. is a good country for higher studies. The flexibility in learning coupled with meeting people from different cultures was a great experience. I completed my master's in December 2017. Studying in the U.S. is an experience which I will never forget.

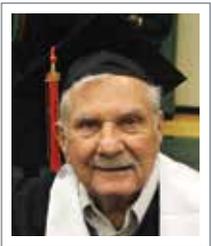
K. Aditya Kumar graduated with a master's degree from Cleveland State University



Walking Across the STAGE

A Fenn College graduate gets the chance to walk across the stage 61 years later.

RICHARD VERES FINISHED HIS STUDIES at Fenn College in 1956, but didn't walk in the commencement ceremony because he was drafted into the U.S. Army. However, on Saturday, May 19, 2018, Veres walked with fellow engineering school graduates — 61 years later.



He was the first in his family to attend and graduate from college.

Veres studied electrical engineering after receiving funding from Reliance Electric — he likely never would have gone to college without financial assistance.

As he prepared to graduate, he was ordered to report for basic training at the U.S. Army training center in Fort Leonard Wood, Missouri. He was heading there for training during commencement, he says.

Veres spent his career at Reliance, retiring in 1998 after 46 years.

In February, following the 2016 death of his wife Donna, he told his children one of the things he regretted in life was not walking across the stage to graduate.

"It was something that really bothered him," said his daughter Melissa Mann. Because of that, she contacted the University.

In April, Dean Anette Karlsson of the Washkewicz College of Engineering wrote to Veres.

The College "appreciates your service and believes every graduate should have the opportunity to participate in commencement," she wrote. She invited him and his family to the May ceremony.

His brother, three children and two grandchildren were able to see him march across the stage.

When asked what advice he would give today's graduates, Veres said:

"When they are ready to start their career path don't let a few rumbles that you get at the beginning, like I had, take you off course. Keep your nose down and keep going. Once you decide what you want to do, don't give up. That worked for me."



FRIENDLY COMPETITION

The Washkewicz College of Engineering Luncheon and Tour, coupled with the Buckeye Regional FIRST Robotics Competition, proved to be successful.

PEOPLE ATTENDING THE FIRST ROBOTICS COMPETITION in March had the opportunity to take a quick break from competition and learn more about one of the highest-quality, engaged and affordable engineering programs in the region — Cleveland State University's Washkewicz College of Engineering.

Tour buses provided round-trip transportation from the Wolstein Center to Fenn Tower and Washkewicz Hall, the new \$60 million engineering building. Students, parents, coaches and educators enjoyed a complimentary lunch buffet while hearing an interactive presentation on the many great things CSU and the College of Engineering have to offer. Following that, guests were led to the new engineering building for lab tours and more.

After the presentations led by engineering students, staff and faculty, guests had the opportunity to view demonstrations in our engineering laboratories and listen to an engineering student panel presentation before catching a bus back to the FIRST Robotics competition.

DID YOU KNOW?

The Washkewicz College of Engineering now offers two \$2,500 renewable scholarships for incoming freshman students who have participated in FIRST Robotics Competitions. That's \$20,000 in scholarships for FIRST competitors over four years! Couple this with over \$700,000 in engineering scholarships awarded annually and one of the most affordable tuitions in the state, and now you have real value for your educational dollar.

Students who attend CSU and the Washkewicz College of Engineering also benefit from co-ops and internships, an available book fund, free tutoring, 18 engineering student groups, cultural event reimbursements and a capstone senior design project.



Campus Representative Recognition

DR. PAUL LIN, associate dean of engineering and professor of mechanical engineering, received the 2018 Outstanding College Representative Award from the American Society of Engineering Education (ASEE) for his continuous contributions in promoting ASEE's mission and activities.

The Campus Liaison Board of ASEE initiated this award in order to recognize those ASEE campus representatives who have achieved excellence in their roles as the society's representative on campus. ASEE campus representatives act as a liaison to help determine members' interest and reactions to society programs and publications, stimulate interest among the faculty in section and national meetings and promote individual membership and involvement. This award is bestowed annually upon those ASEE campus representatives who have demonstrated staunch support for ASEE on their campuses.

Congratulations, Dr. Lin, for your outstanding service.

SETTING THE BAR

Two CSU professors earn Distinguished Faculty Awards.

DR. LILI DONG, associate professor in the Electrical Engineering and Computer Science Department, was selected to receive Cleveland State University's 2018 Distinguished Faculty Award for Teaching. **DR. HANZ RICHTER**, associate professor in the Mechanical Engineering Department, was selected to receive CSU's 2018 Distinguished Faculty Award for Research. Drs. Dong and Richter received their awards at the University ceremony this fall.

CSU's annual Distinguished Faculty Awards honor the contributions of its dedicated employees and illustrate the commitment to students, enthusiasm for education and tremendous skill exhibited by all of the members of the CSU campus community.

Dr. Dong joined the College of Engineering faculty in 2005 as an assistant professor and was later promoted to an associate professor in 2011. During her time at CSU, she has won numerous awards, including Outstanding Faculty Award from the EECS department in 2009, 2012 and 2014, as well as the Merit Award for Outstanding Teaching and Research in 2012 and 2014. Her

research interests include advanced control systems and their applications to real-world situations, with specific focus areas in adaptive control, Kalman filter control, robust control, parameter identification and observer design, applications of the advance control methods of MEMS and implementation of the controllers with embedded systems.

Dr. Richter joined the College of Engineering faculty in 2004 as an assistant professor and was promoted to professor in 2017. He is currently working on three projects with funding from the National Science Foundation, including "Control and Optimization of Robots with Energy Regeneration, Cyber-Enabled Exercise Machines and Development of a Leg Prosthesis Test Robot." His research interests include control theory and applications, system modeling, optimization, biomedical robotics, mechatronics and aerospace control systems.

We thank Drs. Dong and Richter for their continued dedication to CSU, the Washkewicz College of Engineering and our students. Congratulations!

Celebrating **SUCCESS**

*College of Engineering women graduates
were honored at annual dinner.*

THE ANNUAL WOMEN GRADUATES in Engineering Recognition Dinner was held on April 12, 2018. The event is held under the auspices of the Engineering Dean's Diversity Council. In our third year, 29 undergraduate female students were invited, along with guests, to an evening dinner to recognize their achievement in graduating with a degree in an engineering discipline. All areas of engineering were in attendance (civil, chemical, mechanical, electrical, computer and computer science).

This year all in attendance were treated to a fabulous keynote address from Ruthe Farmer. She served as the senior policy advisor for technology inclusion at the White House's Office of Science & Technology Policy under former President Barack Obama, focusing on the Computer Science for All initiative. In addition, she was the chief strategy and growth officer and the K-12 alliance director at the National Center for Women & Information Technology. She currently serves as the chief evangelist for the CSforAll Consortium. CSforAll's mission is to make high-quality computer science an integral part of the educational experience for all K-12 students.



Our students were uplifted and given great advice about succeeding in a male-dominated field. Persistence and confidence were the trending themes of the evening.



ADAPTIVE PLAY

Alumni adapt 50-plus toys for kids.

OVER 40 STUDENTS, alumni and friends gathered in the Foxes' Den in the Washkewicz College of Engineering to adapt 50-plus toys to benefit children with disabilities as part of the College's annual Toy Modification Workshop. The event benefitted RePlay for Kids, a nonprofit organization whose mission is to increase the availability of toys and assistive devices for children with disabilities.

Alumni and friends adapted mainstream, battery-operated toys by placing a switch cable in parallel with the original on/off switch, allowing the toy to be operated by an alternative on/off switch that is plugged into the cable. This alternative on/off switch is larger and easier for children with disabilities to use.

"It's great to see so many of our students, alumni and friends come back and participate each year and give back to the Greater Cleveland community in an engineering way," said Danielle Vath, manager of external relations and communications with the Washkewicz College of Engineering.



CREATING A *Diverse* ENVIRONMENT

Learn more about the College of Engineering's Dean's Diversity Council.

THIS WAS ANOTHER AWARD-WINNING YEAR for the Dean's Diversity Council. The mission of the council is to promote a culturally and intellectually rich environment for diversity and inclusion and support the educational success and personal development of all members in the College. This past year the council focused on two main goals to meet this mission: The first was to strengthen recruitment, retention, achievement and graduation of diverse students. The second was to enrich the campus climate for diversity and inclusion through engaging multicultural programs.

Our first goal was mainly accomplished by a series of events held throughout the year. Through our Fenn Academy collaboration, the Pathways to Engineering (an after-school program) mainly reached out to middle and high school girls to engage them in engineering activities. Our annual Engineering Scholars Day brought nearly 50 high school seniors from around Northeast Ohio to engage with faculty in engineering. Intercultural communication concepts was introduced in the ESC 100 New Student Orientation course to prepare engineering students to

work on diverse teams throughout their journey at CSU, along with many more events.

The Dean's Diversity Council also worked tirelessly to enrich our College climate. Our annual Global Awareness Day brought faculty, students and staff together for an international meal over lunchtime to discuss the state of diversity in our College. The Annual Women in Engineering Recognition Dinner celebrated our female seniors who are graduating. And the CoNECD Conference (First Annual Engineering Computing Collaboration) invited a member of our council to present on best practices on diversity and inclusion for engineering.

This is just a small sample of the programming and initiatives that the Dean's Diversity Council was involved with throughout the school year to make our College a diverse and inclusive place to work and study.

Creation of Anonymity Network

The National Science Foundation awarded \$299,977 to Cleveland State University to support Drs. Ye Zhu, Xiongyi Liu, Haodong Wang and Karla Mansour for their project, "SaTC:EDU: Game-Based Cyber Security Education on Anonymous Communication."

Anonymity networks, networks that allow users to remain anonymous, are becoming increasingly popular. It has been reported that Tor, a second-generation anonymity network, has about 1.2 million regular users. Although research efforts have generated important results regarding anonymous communication, and that anonymity networks are widely adopted by internet users, the education on anonymous communication is very limited.

This project will develop and implement a curriculum that will teach students the basics of anonymity networks using game-based learning. Students completing the curriculum will have an extensive knowledge of anonymous communication and will be able to apply this knowledge to combat a range of cybersecurity attacks when they enter the workforce. Given the increasingly pervasive nature of computing and communication settings and the increasing popularity of anonymity networks, protecting communication privacy, privacy of various internet applications, such as VoIP telephony, and privacy in cyber-physical systems (CPS) is of great societal importance.



Sridhar Receives \$1 Million in Funding

Dr. Nigamanth Sridhar, a professor in the Department of Electrical Engineering and Computer Science and Dean of the College of Graduate Studies, has been awarded \$999,891 over three years by the National Science Foundation under the Computer Science for All (CSforAll) Research Practitioner Partnerships program. He is joined by Debbie Jackson and Brian Harper, both associate professors in the College of Education and Human Services, on the project, which is titled, "Understanding Equity and Access in a CSforAll Implementation."

U.S. Department of Agriculture Grant

Dr. Chandra Kothapalli received a grant from the United States Department of Agriculture for Modeling Pathogen Cross-Contamination and Chlorine Dynamics in Fresh Produce Wash-Cycles. The grant was approved for the amount of \$258,251. The principal investigator on this project is Dr. Partha Srinivasan, an associate professor in the Mathematics Department. The co-principal investigators are Dr. Kothapalli, an associate professor in the Chemical and Biomedical Engineering Department, and Dr. Daniel Munther, an assistant professor in the Mathematics Department. The modeling component of the grant will be performed by Dr. Srinivasan and Dr. Munther while the experimental component will be performed in Dr. Kothapalli's laboratory. The grant will run from 2017 to 2020.



CSU-CWRU Internet of Things Collaborative

The Internet of Things (IoT) Collaborative, initiated by CSU and Case Western Reserve University, has moved from the planning phase to a full launch with funding from the Cleveland Foundation. The IoT Collaborative will lead the development and advancement of IoT as an engaged and socially responsible partner with the communities, industries and government entities of Greater Cleveland. The Cleveland Foundation is providing the collaborative with \$1.75 million in funding for 2018, with the intention of continuing financial support for up to five more years. The CSU principal of the IoT Collaborative grant is Dr. Jerzy Sawicki, vice president for research.

CSU and CWRU will collaborate on research programs, research assets, cross-registered courses and community stakeholder engagement. CSU will leverage its strengths in technology development, social and applied sciences, cybersecurity and business to lead a wide range of research activities. Strategic investments like the FRD-IoT Program are already building IoT-specific research capacity on campus.

Research faculty and staff are encouraged to reach out to the following points of contact to discuss potential IoT-related research opportunities and how to get involved with the IoT Collaborative.

Benjamin Ward
Interim Executive Director

Nigamanth Sridhar
Academic Director

Nick Zingale
Government/Nonprofit Liaison

Brian Ray
Cybersecurity and Privacy Industry Liaison

American Heart Association Funding

Dr. Antonie van den Bogert, a professor and chair of the Department of Mechanical Engineering, and Dr. Ann Reinthal and Dr. Debbie Espy, associate professors in the School of Health Sciences, have been awarded \$195,446 over two years by the American Heart Association for their project, "Balance Training Post Stroke: Intense Harnessed Multidirectional Training as Compared to Reactive and Conventional Protocols."

Fear of falling can cause a stroke patient to self-limit activities during recovery and rehabilitation, which can lead to isolation, a more sedentary lifestyle and a further decline in mobility and overall health. The CSU research team will evaluate a novel balance training protocol for patients who are recovering from a stroke, which will help patients improve mobility and balance as well as reduce their fear of falls.

Dr. Wirth Receives Industry Funding for Coatings Research

Chris Wirth, assistant professor in the Department of Chemical and Biomedical Engineering, has received funding from PPG Industries Inc. to develop a novel method of monitoring coatings as they cure. The project has received \$59,710 for one year and is titled, "Development of a Particle Based Non-Invasive Inspection Technique for Paint."

Dr. Wirth studies the behaviors of particles in fluids, particularly how those particles interact and assemble at interfaces. He and the team in his lab are interested in understanding fundamental relationships between particle interactions, microstructure and bulk properties of colloids as well as industrial and medical applications for these phenomena.

For the PPG-funded research, Dr. Wirth will employ microscopy to track particles in paint coatings in 2-D and 3-D. This technique, which he calls "microrheology," can provide insight into the effects that parameters such as film thickness and evaporation rate have on the material properties of a paint coating. A better understanding of the drying process can potentially lead to reduced coating defects, resulting in improved performance.

CSU Earns RAPIDS Award

The College of Engineering has received a \$171,112 appropriation from the State of Ohio to purchase 3-D printing equipment that will be used in CSU's engineering courses and for workforce training activities with local businesses. The Regionally Aligned Priorities in Delivering Skills (RAPIDS) Award is one of the state's strategic investments in cooperative education and internship programs.

CSU partnered with several regional institutions on the RAPIDS award, including North Central State College, Lorain County Community College and Cuyahoga Community College.

Commercialization Funding for Drs. Yau and Zhu

Two Cleveland State University faculty members were awarded technology commercialization funding by the TeCK Fund. The TeCK Fund is managed by CSU and partner Kent State University, and provides faculty and startup companies with up to \$100,000 to assist with commercialization activities.

Dr. Siu-Tung Yau, a professor in the Department of Electrical Engineering and Computer Science, received funding to move his invention, A Culture-Free Platform for Rapid Diagnosis of Infections, toward market readiness. The technology has been patented and will be used to provide hospital labs with a new platform for rapidly diagnosing bloodstream infections and urinary tract infections.

Dr. Ye Zhu, an associate professor in EECS, received funding to commercially develop his technology, Graphic Game-Based User Authentication Schemes for Mobile Devices. Dr. Zhu's technology has been funded by the NSF and has patents pending.



Dr. Halloran Receives Award for Research with Cleveland Clinic

Dr. Jason Halloran, an assistant professor in the Department of Mechanical Engineering, has been awarded the first year of funding of a planned four-year National Institutes of Health R01 program led by Dr. Ahmet Erdemir of the Cleveland Clinic Lerner College of Medicine. The project, funded by the National Institute of Biomedical Imaging and Bioengineering, is titled, "Reproducibility in Simulation-Based Prediction of Natural Knee Mechanics." Dr. Halloran's budget under the program is \$482,956.

Dr. Halloran's research focuses on computational biomechanics with applications in orthopedics-related device analysis, multiscale simulation of human tissue and cellular deformation. He has also collaborated with surgeons at St. Vincent Charity Medical Center's Spine & Orthopedic Institute to improve rehabilitation techniques and create new prosthetic technologies.

Dr. Moo-Yeal Lee Wins EPA Toxicity Testing Challenge Award

Dr. Moo-Yeal Lee, an assistant professor in the Department of Chemical and Biomedical Engineering, has been awarded \$100,000 from the U.S. Environmental Protection Agency as a winner of Stage Two of the Transform Toxicity Testing Challenge.

The EPA and the National Institutes of Health initiated the Transform Toxicity Testing Challenge in 2016 to improve high throughput screening chemical testing methods, which currently do not account for how the human body metabolizes chemicals. Metabolic reactions can potentially result in a more toxic form of a chemical.

Dr. Lee has developed 3-D bioprinting technology that creates cell tissue structures that contain multiple layers of human cells. These miniature tissue blocks can be used to mimic human metabolic reactions, creating conditions in a laboratory that are comparable to what happens in the human body. His high-precision, robotic bioprinting technology uses a 384-pillar plate design, which allows for a large number of tests to be efficiently completed. Dr. Lee's technology can be retrofitted to current toxicity test systems, improving their accuracy.



IEEE CSS Seminar

Dr. Lili Dong organized an IEEE CSS seminar on April 5, 2018. It was a joint event between the IEEE Control Systems Society and IEEE HKN, Epsilon Alpha Chapter. There were 52 attendees, including CSU faculty and students, students from Case Western Reserve University and engineers from local industry. Dr. Robert Veillette from the University of Akron gave a presentation entitled, "Insulation Fault Detection in Buried Power Cables: A Feedback Control Application." The event successfully promoted networking between academic researchers and industrial practitioners, and enhanced students' learning beyond the classroom.

NSF REU Students Disseminate Research at National Conferences

This summer, CSU hosted the first student cohorts for two National Science Foundation Research Experiences for Undergraduates (REU) Sites: the Synthesis, Assembly and Characterization of Soft Matter Systems (Soft Matter REU) Site and the Rehabilitation Engineering at CSU (RE@CSU) Site. Participants for these REUs were recruited from across the nation, including CSU undergraduates Alonte Garnett and Tony Dobrila.

Garnett and David Maher from Duquesne University won second place in the Undergraduate Student Poster Competition at the International Mechanical Engineering Congress and Exposition in Tampa, Florida. They were supervised by CSU doctoral student Curt Laubscher, mechanical engineering professor Jerzy Sawicki and EECS professor Dan Simon.

Tony Dobrila was selected by the Council on Undergraduate Research to present his work at the CUR's REU Symposium in Alexandria, Virginia. Tony was advised by associate professor of physics Kiril Streletzky, who leads the Soft Matter REU Site, and associate professor and chair of the Department of Physics Petru Fodor.





Alumnus Named Vice President, Corporate Development & Global Strategy

AST, the leading provider of proactive patent risk mitigation solutions, has named Ray Strimaitis to the newly created role of vice president, corporate development and global strategy. Strimaitis will report directly to Russell W. Binns Jr., CEO of AST, and will be based in Silicon Valley. Strimaitis joins AST after serving as vice president and deputy general counsel for Yahoo! Inc. Strimaitis will be responsible for leading AST's member acquisition strategy and will play a critical role in developing the organization's global growth strategy, including addressing the needs of AST members and developing further programs and solutions for current and prospective members of AST.

Before joining Yahoo!, Strimaitis served in various legal, management, marketing and sales roles at IBM. He received his J.D. from Cleveland-Marshall College of Law and his Bachelor of Science in Electrical Engineering from Cleveland State University.



Alumnus Turns 100

Michael Pollock, an electrical engineering alumnus who donated \$260,000 for Washkewicz College of Engineering scholarships, turned 100 on Dec. 22, 2017. He is currently in an assisted living facility (ranked third best in the U.S.) and is doing well. He previously received a new computer and printer and says he is well cared for. Despite being in an electric wheelchair, he says he feels very good knowing he has "not lost his marbles" yet. He always displays a great sense of humor in all of his communications. He wished the College well on the opening of our new building.

• • IN MEMORIAM • •

Robert Martin Stark

Robert Martin Stark, 87, of Newark, Delaware, died on November 18, 2017. He was born and raised on Long Island, New York, to the late Yolanda and Alex Stark.

Stark graduated from the public schools in 1948. He attended Long Island University and Johns Hopkins University (A.B., 1951). At the University of Michigan (M.A., 1952), he met and married Carol LaSage (dec. 1988) in 1955. They raised four children.

Stark was employed briefly at Bausch & Lomb, Rochester Institute of Technology and as assistant dean of engineering and assistant professor of mathematics at Fenn College of Engineering until 1962 when he went to the University of Delaware as an instructor (Ph.D., 1965). He rose to professor emeritus of civil engineering and mathematical sciences (2003). He authored many research papers and books and was visiting associate professor of civil engineering at M.I.T. (1972-73).

Stark was a lifelong student of American history, a colleague stimulated his interest in Benjamin Franklin. He taught several classes and completed a manuscript, "Benjamin Franklin, An American Innovator." He published research on the first silver dollars of the United States and formed one of the largest collections of them over 45 years.

Stark was also a member of scientific societies and a Fellow of AAAS. He volunteered and served on many boards and offices of nonprofits — some for decades such as the Delaware Academy of Science, Generations Home Care, Delaware Heritage Commission, UD Association of Retired Faculty (founder) and WHY Community Advisory Board, among others. He received an Outstanding Alumnus Award from the UD College of Engineering.

Stark is survived by four children: Bradley of Coral Gables, FL; Timothy (Joan) of Urbana, Ill.; Steven (Kathleen) of Ft. Myers, Fla., and Candice Combs of Havelock, N.C., and eight loving grandchildren and loving partner, Phyllis Franklin Bierstedt and brother, F. Richard Stark, in Potomac, Md. In addition to his parents, he is preceded in death by his wife, Carol LaSage.



DONATIONS



Powerful PARTNERSHIPS

The new Fenn Academy-FirstEnergy STEM Alliance will provide exceptional opportunities for students.

THE NEW FENN ACADEMY-FIRSTENERGY STEM Alliance is a partnership among Washkewicz College, FirstEnergy, Polaris Career Center and its satellite schools and Cuyahoga Community College. The alliance will be an ongoing effort to fulfill FirstEnergy's need for a more diverse workforce, including professional engineers and other skilled workers, while simultaneously identifying and preparing students for future employment in STEM fields.

FirstEnergy donated \$12,000 to support the start of the initiative, including \$5,000 directed specifically at new activities with Polaris and its partner schools, and \$7,000 to support Fenn Academy's ongoing activities. Those include Women Exploring Engineering, Engineering Activity Day campus visits, the annual Engineer-for-a-Day job shadowing program and enhancement of CSU's existing Operation STEM (OpSTEM) program, focusing specifically on engineering students.

The company has agreed to provide tours of its facilities for 180 students from Polaris Career Center and to use FirstEnergy staff to help create educational materials and develop curriculum. FirstEnergy will also market the program to students and educate participants about the path to become FirstEnergy employees.

All students will visit the Washkewicz College of Engineering and Tri-C to become familiar with engineering and technology degree programs and the services offered by both institutions. The company will also provide engineers to serve as guest speakers at activities taking place at all participating schools.

"If this model works effectively, it is our hope to develop similar pipeline programs with other engineering firms and Fenn Academy partner schools. We are extremely grateful to Charlie Lasky, senior vice president of human resources at FirstEnergy, for facilitating this gift, and equally grateful to our partners at Polaris Career Center and Tri-C for their active involvement, advice and support in shaping this new venture," said Gregg Schoof, manager of engineering student programs and associate director of the Fenn Academy.

The Fenn Academy, started in 2005, is the community outreach program for the Washkewicz College of Engineering. Currently, the program has over 70 partner high schools and middle schools in six Northeast Ohio counties and serves at least 3,000 students annually.

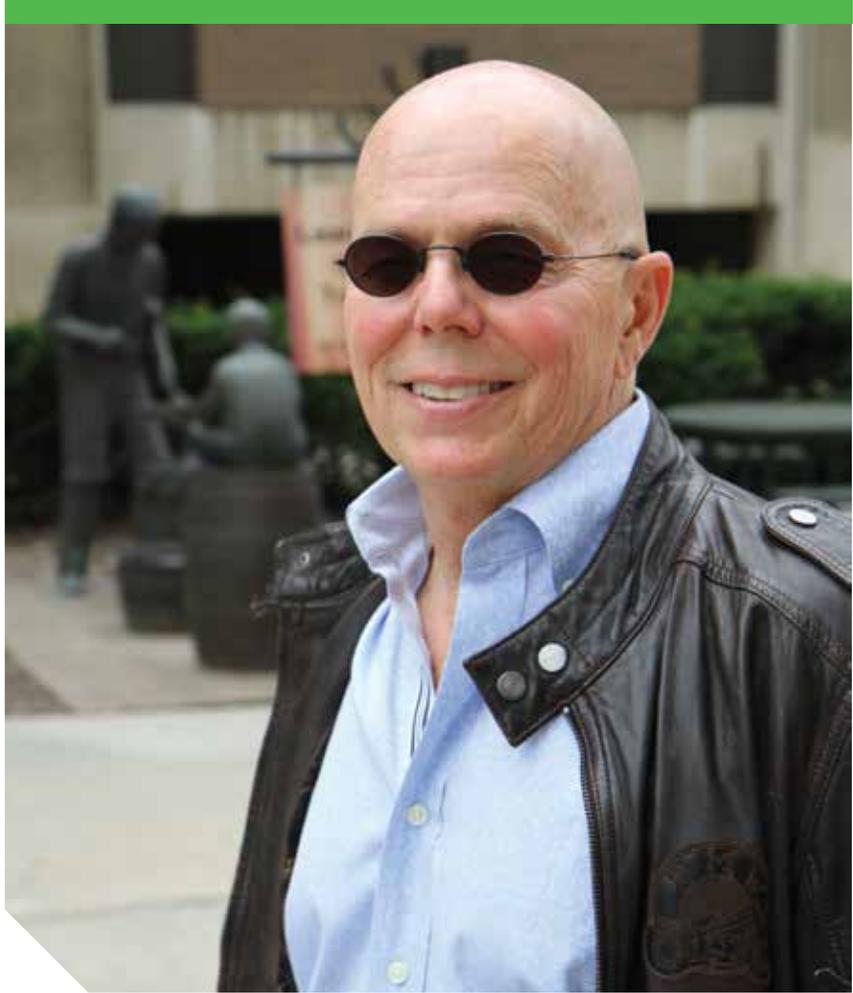
To discuss making a donation to the Fenn Academy, contact Meredith Wintering, director of advancement for the Washkewicz College of Engineering, at 216.687.3954.

MORE ONLINE → Find more at csuohio.edu/fennacademy



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**MY HOPE
IS THAT
THIS PIECE
ENCOURAGES
AND
REINFORCES
TO STUDENTS
THAT THEY
ARE HERE
TO LEARN
SOMETHING
USEFUL.**

//
JOHN HUBBARD



LEARNING THE TRADE

Alumnus commissions sculpture to encourage students on campus.

JOHN HUBBARD GRADUATED with his bachelor's degree in 1970 and recently had the "Learning the Trade" sculpture commissioned by Paul Todlock. The "Learning the Trade" statue is currently located on the corner of East 24th Street and Euclid Avenue, not far from where his parents dropped him off on a Sunday afternoon in 1965 with a suitcase, slide rule and portable typewriter. Hubbard arrived feeling unprepared academically, but knowing that he had the dedication and drive to succeed. He credits his graduation to the cooperative education program, allowing him to pay for most of his education and gain meaningful experience for post-graduation.

"My hope is that this piece encourages and reinforces to students that they are here to learn something useful," said Hubbard.

The "Learning the Trade" sculpture reads: "Materials are the foundation of nearly all engineering applications and nowhere are the linkages more evident than that between steel, Cleveland and higher learning at Cleveland State University. From early processes where 'Learning the Trade' substituted for normal engineering education to today's advanced engineering professionals that require engaged learning of the highest level, the Washkewicz College of Engineering embodies these concepts and values, and pays tribute to the materials and technologies that lead to the development of the region — past, present and future."



HANDY WORK

A collaboration with The Austin Company has brought the Samuel Austin Woodshop to the Washkewicz College of Engineering.

ON NOVEMBER 16, 2018, Cleveland State University dedicated its new state-of-the-art, hands-on woodshop within the Dan T. Moore MakerSpace at the Washkewicz College of Engineering. The woodshop, made possible through a collaboration between The Austin Company and CSU, including the financial support of The Austin Company, will contain teaching space, multiple pieces of significant woodworking equipment and an advanced Shopbot, a 3-axis CNC machine for fabricating wood, plastic and aluminum. In recognition of The Austin Company's support in making the shop possible, CSU is pleased to announce the new woodshop will be named The Samuel Austin Woodshop (SAW), after the company founder, Samuel Austin. SAW will provide CSU students with maker-based learning opportunities through hands-on workshops, industry expertise and student projects.

"I have been very pleased to work with The Austin Company to create the Samuel Austin Woodshop, a great new resource for our students, faculty and the community. The shop provides students with a unique and interactive way to learn and practice design followed by real-world implementation of their designs. Helping

to support CSU's creation of 'Ready-to-Go Engineers,'" said Dean Anette M. Karlsson. "I especially want to thank Brandon Davis of Austin, who speaks to and engages with our students, serves on the Washkewicz College of Engineering Visiting Committee and was critically involved in making this a reality."

"Our founder, Samuel Austin, was a carpenter by trade, and perhaps one of his greatest contributions to our industry was the invention of the integrated design-build project delivery method. He believed that if tradespeople understood how to work the drawing pen and to value design, and that if engineers were trained and practiced in how designs are built, that this cross-functional knowledge and collaboration would result in better projects, better facilities and better manufacturing plants. The SAW at CSU continues that core belief, allowing students to enhance their learning through real world practice," said Mike Pierce, president of The Austin Company. "Built into our DNA since our foundation in 1878 has been to give back and support our community, and we are glad to continue to do that with the creation of The SAW at CSU."



Generous **GIFT**

The new Karpinski Collaboration Lounge provides a reprieve for students and faculty.

KARPINSKI ENGINEERING designs environments that inspire. They collaborate with organizations and design professionals to develop spaces for healing, learning, business and discovery. Karpinski Engineering has a long-standing relationship with Cleveland State University: They have partnered on over 200 building projects at CSU, and they have over 30 CSU alumni on their 150-person staff.

James Karpinski, a Fenn College of Engineering alumnus, co-founded Karpinski Engineering in 1983 and retired in January of 2018.

In 2017, Karpinski Engineering gave their largest single gift in company history to the Washkewicz College of Engineering, naming the second-floor collaboration space looking out over the largest green space on campus.

"It was an easy decision to make the donation," said Jim Cicero, president and CSU alumnus. "We hope that the Karpinski Collaboration Lounge provides a space for students to build friendships and to assist in preparing 'Ready-to-Go Engineers' for generations to come."

This past June, Karpinski Engineering hosted a cocktail hour in the space for their engineering staff and Washkewicz College of Engineering faculty and staff to celebrate. Over 40 individuals attended.

Thank you, Karpinski Engineering, for your continued support of our Washkewicz College of Engineering students.



DONATIONS

Thank You

A HEARTFELT THANK YOU to the 741 donors who gave \$2,107,466 in gifts and pledges to the Washkewicz College of Engineering during the Fiscal Year 2018 (July 1, 2017-June 30, 2018).

Your generous support allows the College to continue providing a high-quality, affordable engineering

education, along with innovative programming that helps our students succeed.

The list below gratefully acknowledges gifts and pledges of \$500 or more from alumni, friends, corporations and foundations to the College during the period of July 1, 2017-June 30, 2018.

\$1,000,000+

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\$250,000-\$999,999

Mrs. Lillian Cawley

\$125,000-\$249,999

The Cleveland Foundation

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