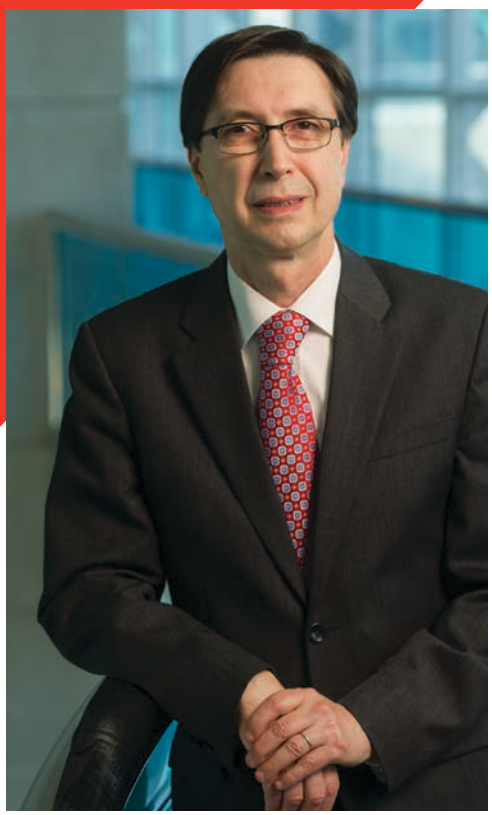
3E - Engineering Excellence Edwardsville

siue.edu/engineering

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE
SCHOOL OF ENGINEERING

FROM THE DEAN



If you search the Internet for "what do engineers do," numerous resources state, "Engineers apply the principles of science and mathematics to develop economical solutions to technical problems. Their work is the link between scientific discoveries and the commercial applications that meet societal and consumer needs."

This issue of *3E* demonstrates how the SIUE School of Engineering community is committed to meeting the needs of our School and making an impact on societal and consumer needs, both regionally and across the world.

This year, we saw the completion of our multi-year goal to provide our students with a dedicated space to develop plans and bring their projects to life. The Fowler Student Design Center opened last fall and the space has been buzzing since. The facility boasts an innovation loft, design team workspaces, design labs and more. Thanks to a generous $1.5 million donation from Enterprise Holdings Foundation, we are currently renovating our atrium to give students even more space to collaborate.

Not all of our changes are as visible as facility improvements. We remain diligent in watching industry trends to determine what our students need to know in order to prepare for their lives after graduation. For example:

- We hosted our first Senior Design Showcase last spring. The top senior design projects in each department were evaluated by industry representatives, giving those students exposure to presenting their projects outside of the classroom setting.
- We continue to be committed to developing an entrepreneurial mindset in the School of Engineering. This February, we hosted a weekend-long workshop that taught entrepreneurial skills to university students in a hands-on environment.
- We are developing innovative new programs to prepare our students for future jobs.

We invite you to be a part of our evolution. To learn more about how you can join these efforts, please contact me at skaraca@siue.edu.

To all of those who support to our school, we are extremely grateful for your generosity. Your participation will give us the opportunity to continue to do what engineers do—solve problems.

Sincerely,
Cem Karacal, PhD
Dean

ABOUT THE SCHOOL OF ENGINEERING

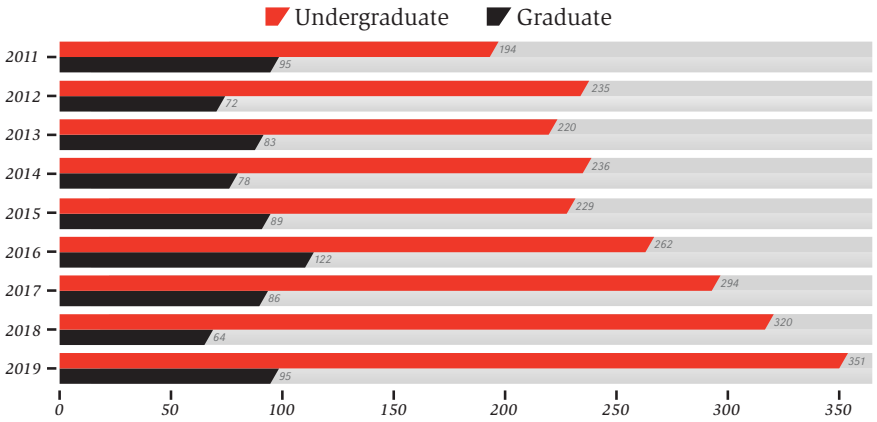
Growing reputation for outstanding programs, rising academic qualifications of applicants, and a nearly 100% placement of graduates in the engineering fields are clear testimonies to the quality of engineering education at SIUE.

Since 1982, the School has prepared students to meet the growing needs in our region and nation for more engineers, computer scientists and construction managers. Fueling the prosperity of our region, the School has graduated more than 7,000 engineering professionals. More than 60% of our graduates work in the St. Louis metro area.

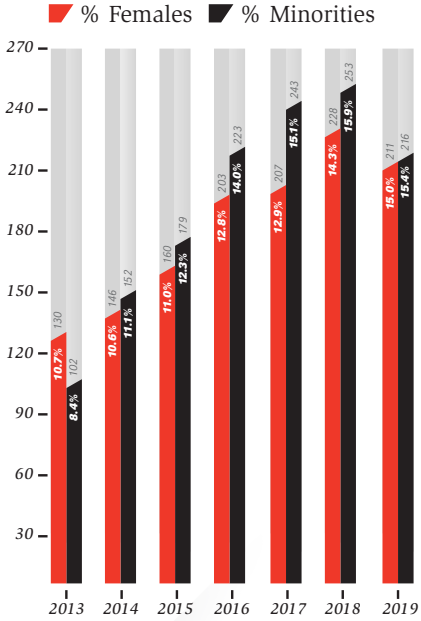
Incoming SIUE School of Engineering 2019 Freshman ACT Scores

SIUE Engineering Math Score	Illinois Math Score	National Math Score	SIUE Engineering Composite Score	Illinois Composite Score	National Composite Score
29.0	23.8	20.5	27.6	24.3	20.9

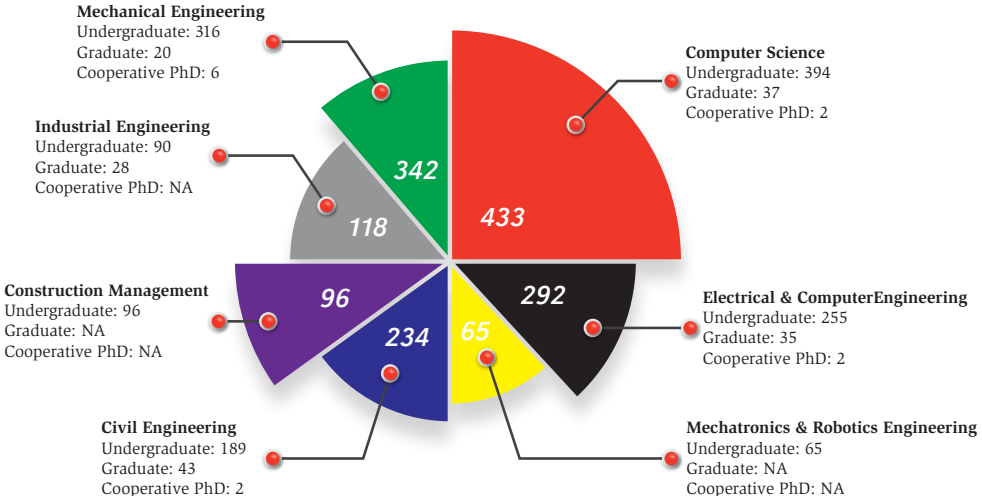
Graduation



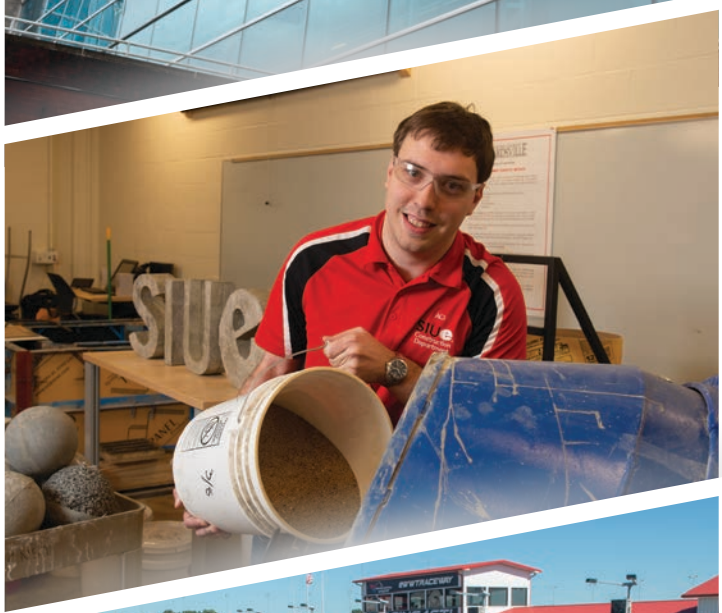
Female and Minority Undergraduate Enrollment



Undergraduate and Graduate Enrollment by Program



TEAMS BUILD EXPERIENCED LEADERS



Each year, student organizations and design team members put their knowledge and competitive spirits to the test by participating in student competitions and community service. These opportunities emphasize teamwork while developing communication and leadership skills. Here are a few examples of recent student experiences.

American Society Of Mechanical Engineers
The School of Engineering student chapter of the American Society of Mechanical Engineers (ASME) **placed among the best in the nation** at the Human Powered Vehicle (HPV) Competition. The team ranked 11th overall among 50 teams, including a seventh-place finish in the women's drag race tournament and a ninth-place finish in the men's category.

Drone Club
The Drone Club aims to **develop a joint project with ASME to compete in IAM3D**, a challenge designed to give undergraduate students from different disciplines an opportunity to re-engineer existing products or create new designs. The joint team will design and build a drone to carry a small payload through an obstacle course five times within 15 minutes in a race against other schools. Due to the high speed, team members are not allowed to be on the course and instead must use first-person view cameras to maneuver drones through obstacles. A major point of the competition is to use as many additive manufacturing 3D printed pieces as possible in the design and build.

Luke Snell ACI Student Chapter
The Luke Snell American Concrete Institute (ACI) Student Chapter proved victorious in the ACI Illinois Chapter's Fiber Reinforced Concrete Bowling Ball competition where they **received a first-place prize.**

Solar Car Race Team
The Solar Car Race Team upgraded the car's battery pack with a fresh set of lithium-ion cells in a new configuration. The solar car team **received the battery pack design award** at the 2019 Formula Sun Grand Prix. Various other teams took pictures of the award-winning battery pack for future inspiration.

Computer Association of SIUE
The Computer Association of SIUE (CAOS) is a student chapter of the Association for Computing Machinery (ACM) open to all students interested in computing. **CAOS took first and third places** at the ACM International Collegiate Programming Competition, and **ranks third in the nation** in Major League Hacking Local Host presentations.

Constructors Club
Using their building skills and knowledge, 13 students from the Constructors Club **made a positive impact on families in need** last March. This marked the fifth consecutive year the club has visited Walton County, Fla. to build houses during the University's spring break.

SENIOR DESIGN PROJECT SHOWCASE HIGHLIGHTS STUDENT INNOVATIONS

Over 25 industry professionals visited the School of Engineering in April to view and judge the Senior Design Project Showcase. The event offered a display of required capstone projects that seniors complete in order to practice teamwork and critical analysis while applying creativity in a design project with real-life applications.

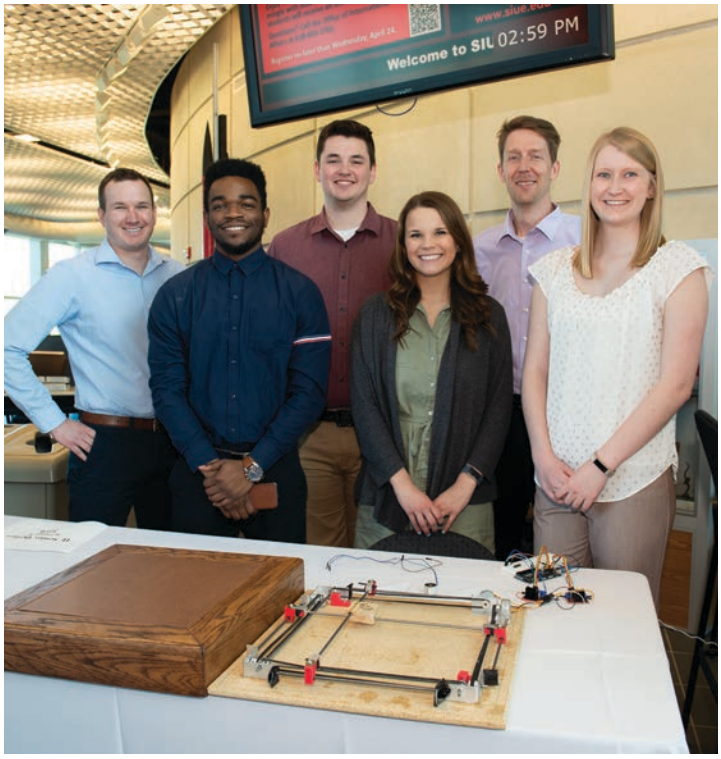
"It's impressive to see some of the innovative things these students have designed and developed," said '93 electrical engineering alumnus and advisory board member Mike Blakey, senior maintenance manager at Anheuser Busch In-Bev. "This School is really second to none, and I visit many schools in the Midwest. The quality of these projects is outstanding."

One of the intriguing industrial engineering projects was Robo-Checkers. Inspired by the idea of playing checkers from a remote location, the project team created an automated checkers board that allows a computer program to virtually tell the board its next move. Once the user has made a move, a magnet on the board will move the chosen piece to the intended position.

"One of my teammates loves playing board games with his family, but isn't with them often in person," explained Elise Rainey, of Carlyle, Ill. "We decided to create Robo-Checkers so it would be as if he's there playing with them."

Rainey's teammates included Zachary Haake, of Effingham, Ill.; Jonathan Lengermann, of Highland, Ill.; Dunamis Obomighie, of Nigeria; Taylor Pyzynski, of Rockford, Ill.; and Matthew Schlecht, of Granite City, Ill.

Another student team of civil engineers displayed drawings and plans for a pedestrian bridge that would connect two existing brick buildings in St. Louis. The team was presented three options to design before narrowing the choice down to the most cost-effective route.



"This was an extensive design project, so everything we've learned will prove beneficial as we move into the professional world," said Zachary Clowers, of Bethalto, Ill.

"One of the things that we in the industry need is a good talent pipeline. Engaging with local universities is important, so I'm glad to be here," said Bill Butler, vice president of engineering at Emerson Commercial and Residential Solutions Group in St. Louis.

> "These students have done impressive work and will be valuable to our industry."
> - Bill Butler, Vice President of Engineering at Emerson Commercial and Residential Solutions Group, St. Louis

ENTERPRISE HOLDINGS DONATION SUPPORTS INNOVATIVE STUDENT WORKSPACE

This fall, the Enterprise Holdings Foundation donated $1.5 million to the School of Engineering, marking the School's largest gift to date. The three-year, $500,000 annual donation further solidifies the School as a nationally-recognized top tier institution cultivating academically and technically prepared talent.

"As a business that has been headquartered in St. Louis for more than 60 years, we are committed to supporting the growth and development of the St. Louis community," said Carolyn Kindle Betz, president of the Enterprise Holdings Foundation. "Our donation to the School of Engineering represents an investment in the next generation of IT talent and the future of the Greater St. Louis community as a whole."

The donation will be used to support the renovation of the School's atrium into a collaborative student workspace. Reimagined and renovated, the Enterprise Holdings Foundation Atrium will prominently display the strong partnership between the School and Enterprise Holdings. Once complete, the atrium will feature technology and electrical upgrades, and new, high-quality furnishings that will offer students, faculty, alumni and industry stakeholders a welcoming place to convene for the sharing of ideas and to comfortably accomplish academic and professional goals.

Enterprise Holdings has collaborated with the School for several years to connect students and graduates with career opportunities in its IT department. Along with the University's rigorous academic standards and aggressive approach to innovation, the partnership has created an ongoing talent pipeline to meet changing demands for technical talent. Enterprise routinely accepts the School's students in its IT internship program, and in the past five years alone has hired more than 80 interns and graduates.

"This gift is both timely and meaningful, as our School of Engineering is increasingly integrating with St. Louis area companies and becoming part of the technology ecosystem of the region," said Dean Cem Karacal, PhD. "Such a mutually beneficial collaboration is destined to have a strong, positive impact on the economic well-being of our region."

The first installment of upgrades to the atrium space is slated for completion in the spring of 2020. A ribbon cutting ceremony will follow to unveil the new Enterprise Holdings Foundation Atrium.

> **"With this generous gift from the Enterprise Holdings Foundation, our role as a prime source of technical talent is being recognized by one of our valued industry partners, and for that we are extremely grateful and proud."**
>
> **- Dean Cem Karacal, PhD**

AMEREN SPONSORS STATE-OF-THE-ART POWER SYSTEMS LAB

A charitable gift from Ameren Illinois will help fund research equipment acquisition and research studies being performed in the School of Engineering's new Power Systems Lab, which is currently in development.

The Power Systems Lab will present potential areas of collaboration between Ameren and the School, which plans to develop a first-class power engineering program. Collaborative opportunities may include studies into advanced electrical power systems and technical problems, microgrids, smart grid, customer users of electricity, and related areas. The lab will be utilized by both undergraduates and graduate students, and will include features such as phasor measurement units, real-time power simulators, SEL power protection rays, smart meters, power converters, renewable energy sources and more.

"Ameren Illinois is continually testing innovative approaches to build a smarter energy delivery grid and to support the emerging demand for cleaner energy sources," said Ameren Illinois Chairman and President Richard Mark. "Through our partnership with SIUE, we will have the support of cutting-edge research while training our potential future workforce."

"As power engineering technology is changing rapidly, the nation's entire power grid system is evolving into the new, smart grid," explained Xin Wang, PhD, associate professor in the Department of Electrical and Computer Engineering and director of the Power Systems Lab. "New technologies require that higher education in power engineering also continuously advances. With this support from Ameren, SIUE aims to develop one of the best power engineering labs in the nation, featuring the latest technologies used in the power industry."

> **"Through our partnership with SIUE, we will have the support of cutting-edge research while training our potential future workforce."**
>
> **- Richard Mark, Ameren Illinois Chairman and President**

RESIDENCY BENEFITS INDUSTRY AND STUDENTS ALIKE

Recent Department of Construction Advisory Board meetings have brought increased focus to the importance of the School's partnerships with industry leaders. As a result, Ahmed Abdelaty, PhD, assistant professor and chair of the Department of Construction, spent two months in residency with L. Keeley Construction of St. Louis, helping analyze the company's historical cost data.

"These partnerships present an opportunity to improve classroom instruction by using real-life examples to enhance the learning environment," Abdelaty said. "It also helps industry partners to have an external eye to review their workflow and discover ideas for improvement. Industry partners get the chance to have someone to work on developing ideas at times when everyone else is busy doing their daily tasks."

"At L. Keeley, we believe that integrating Dr. Abdelaty into our company for the summer was critical for us to better understand how we do things, where we excel and where we can improve," said Kevin Nesselhauf, BA '08, MBA '13, project manager, L. Keeley. "We were able to complete self-discovery projects we had been discussing for years that have already implemented improvements within our company."

A portion of Abdelaty's residency work has been accepted for publication and presentation at the American Society of Civil Engineers Construction Research Congress, one of the largest venues for construction academics.

FROM ISTANBUL TO EDWARDSVILLE: CELIK SPREADS ENERGY AWARENESS

Serdar Celik has transformed his passion for alternative and renewable energy sources into an internationally recognized energy symposium. With a focus on energy efficiency, renewable energy and energy politics, the event was first introduced in Turkey in May 2017.

Last May, the third Ilgaz Energy Symposium was held at historic Istanbul University and led by Serdar Celik, PhD, professor, Department of Mechanical and Industrial Engineering, a native of Turkey. The symposium hosted energy professionals from academia, public institutes, the private sector and nonprofit entities. Experts from the fields of solar, wind, geothermal and biomass spoke on topics covering energy efficiency and renewable energy technologies.

"The symposium has been expanding and yielding a broader impact since we started in 2017," Celik said. "With support from both academia and the private energy sector, and the experience we've had, we will keep improving the impact of these symposia."

Along with drawing national and regional news coverage in Turkey, the symposium's success was highlighted by *USA Today*, raising awareness of SIUE and its School of Engineering.

> **"Our goal is to create an annual fall event and be the first institution that comes to mind when people talk about energy and sustainability topics in the greater St. Louis area."**
>
> **- Serdar Celik, PhD, professor, Department of Mechanical Engineering**

Inspired by the growth of the symposium in Turkey, Celik organized a similar event to promote awareness of energy issues to the students of SIUE. Following suit, SIUE hosted Energy Symposiums in 2018 and 2019, featuring topics about awareness of alternative and clean energy sources.

"We hope to increase understanding of regional and global energy issues, and to promote awareness on various energy topics," Celik said.

The inaugural symposium began with a poster session where engineering students presented on various energy sources. Next, students participated in a geothermal versus wind energy debate. Representatives from higher education, alternative energy, corporate leadership, public utilities, energy consultants and environmental agencies served as judges, and the debate was open to the public. The symposium ended with a networking event where students were able to connect with industry professionals.

"I was extremely happy that we received such positive feedback from faculty, students, community members and industry professionals," Celik added. "The networking hour was quite productive as many students said they were able to make some corporate sector contacts. It certainly was a valuable day for SIUE."

INAUGURAL WATER SYMPOSIUM HIGHLIGHTED A BROAD RANGE OF EXPERTS

Water is a unifying, life-giving resource and is something everyone needs to survive. This underlying message was the reason SIUE's Environmental Resources Training Center (ERTC) hosted its inaugural Water Symposium, held in conjunction with Earth Week in April.

The ERTC offers specialized courses for careers in drinking water and wastewater treatment systems, equipping students with the job skills and resources needed to create a competent workforce.

"Regardless of how you look at water, whether it's from the perspective of supply, water treatment, wastewater treatment, surface water run-off or infrastructure, the need to address these issues is important for the overall sake of water preservation and supply," said Matthew Maas, ERTC director.

Along with Maas, speakers and areas of interest included:

- Rohan Benjankar, PhD, assistant professor, Department of Civil Engineering: water resources engineering, floodplain physical habitat, aquatic and riparian ecosystems, and river restoration
- Pat Gleason, of American Water Works Association: e-Learning/ engagement, rural community assistance
- Vic Hamer, founder of the non-profit Christian organization "Give Me Water Lord:" the need for clean water Kenya
- Nina Kshetry, founder and president of Ensaras Inc.: municipal, industrial and agricultural wastewater treatment projects, including wastewater recycling and reuse
- Zhi-Qing Lin, PhD, professor, Department of Environmental Sciences: biogeochemistry of environmentally important trace elements, phytoremediation and constructed treatment wetlands
- Kevin Tucker, PhD, assistant professor, Department of Chemistry: analytical and environmental chemistry, and tracking pharmaceuticals and personal care products through the environment

"The Water Symposium brought stakeholders together, let them speak on their areas of expertise and network for the purposes of learning and collaborative problem solving," Maas explained.

CARNEGIE RECLASSIFICATION HIGHLIGHTS DOCTORAL RESEARCH

SIUE has been reclassified into the newly created doctoral/ professional universities category by the Carnegie Commission on Higher Education. The categorization better reflects the array of programs offered at SIUE and more accurately highlights the doctoral programs.

The School of Engineering offers PhD in engineering science and computer science programs through a cooperative agreement with Southern Illinois University Carbondale. The collaborative PhD programs are supported by research activities and projects of the SIUE School of Engineering, two of which are highlighted below.

Daniel Raja, Doctoral Student and Teaching Assistant, Department of Mechanical Engineering

Metals deform during their life as part of their applications. The deformation is due to the movement of planes of atoms slipping along a particular direction and/or twinning about a particular directional axis.

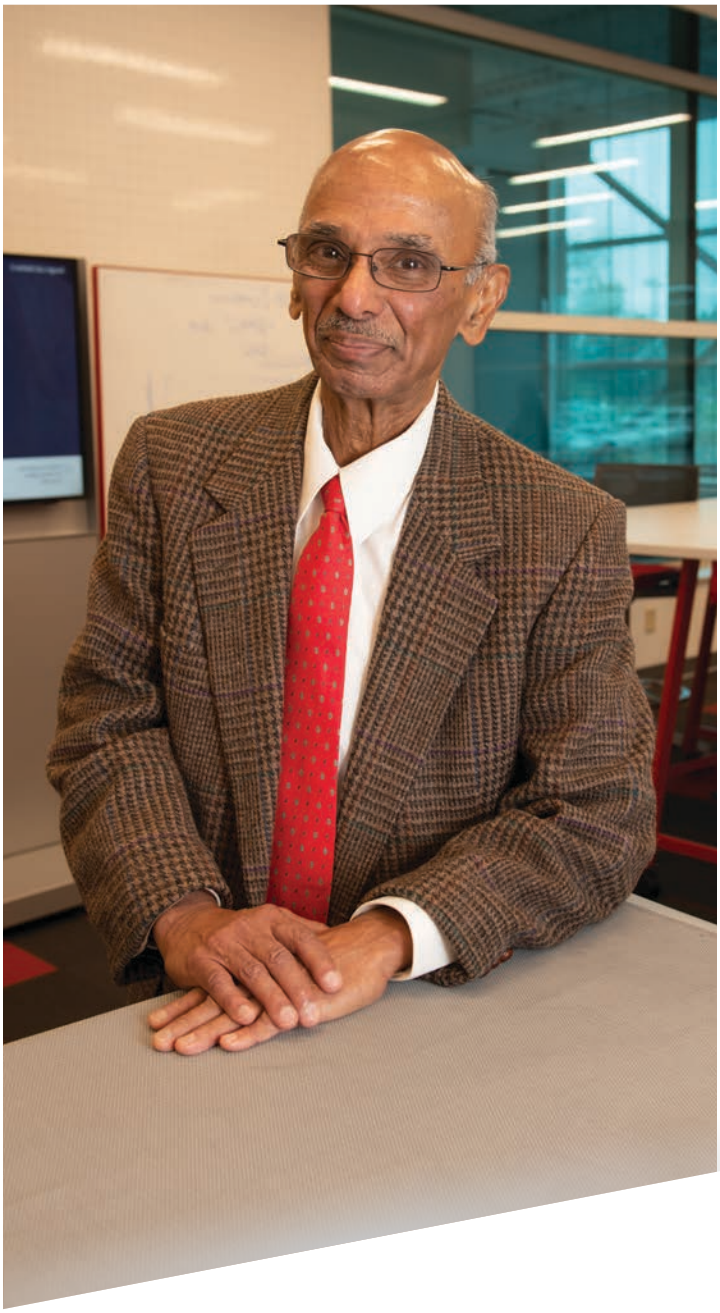
Raja's research, under the advisement of Soondo Kweon, PhD, associate professor, Department of Mechanical Engineering, quantifies the contribution of each slippage and/or twinning toward the overall deformation process of the metal, providing insight into the weaknesses of the materials. This understanding is vital for the design and selection of materials in the development of astronautical, aeronautical and naval vessels.

Saeed Onsorynezhad, Doctoral Student and Teaching Assistant, Department of Mechanical Engineering

Due to a growing desire for batteryless portable electronic devices or wireless sensors, research attention is drawn to energy harvesting from ambient energy sources. Converting the kinetic energy of vibration into electrical energy is one of the most effective methods due to its convenience and high efficiency, and piezoelectric energy harvesters are the most promising method of scavenging vibrational energy.

Onsorynezhad is among a team of researchers studying frequency up-conversion, a technique shown to improve piezoelectric energy harvesting. The project, under the advisement of Fengxia Wang, PhD, associate professor, Department of Mechanical Engineering, evaluates and tests conditions for maximum power output.

PROFESSOR EMERITUS GIVES BACK DOUBLY



Professor Emeritus Raghupathy Bollini, PhD, joined SIUE in 1973 as an assistant professor in what was then the Department of Engineering and Technology. At that time, the small department offered four programs: urban and environmental engineering, electronics engineering, engineering science, and sanitation technology.

"During my years with the School, I witnessed several gratifying changes," Bollini said. "Most importantly, we became an independent School of Engineering with our own building. We added graduate programs and departments, and I was instrumental in incorporating the computer engineering program."

Bollini retired as chair of the Department of Electrical and Computer Engineering in 1999 and maintains his commitment to the School. As such, he recently doubled his investment in the Raghupathy and Sailarani Bollini Endowed Scholarship.

Bollini's gift ensures scholarships for computer or electrical engineering students with preference given to those with financial need, as well as first-generation college students. Bollini hopes the scholarship, which is open to continuing students with a 3.0 GPA or higher, will help deserving students achieve their goals.

By creating an endowed scholarship, the Bollinis have established a permanent asset from which engineering students can receive support. The gift is invested for growth, the revenue of which then provides annual scholarships on a continual basis.

"The School permitted me to mature as a responsible citizen," Bollini said. "Most importantly, it gave me employment I enjoyed, as well as wonderful colleagues. I would like to see the School continue to grow and serve the region, state, nation and world."

> "The School of Engineering gave me the financial security and freedom to achieve everything in my life, and this is the least I could do to repay such a great educational institution. I am proud to have taught there and to have been a part of its impressive growth."
>
> - Raghupathy Bollini, PhD, Professor Emeritus

BEETNER FAMILY $35,000 ENDOWMENT SUPPORTS EXPERIENTIAL LEARNING OPPORTUNITIES

Experiential learning opportunities build on knowledge gained in the classroom to enrich the student experience and prepare future leaders to shape a changing world. Last spring, the Beetner family contributed $35,000 to create an endowment that will continue to provide these opportunities for School of Engineering student organizations.

“We deeply appreciate the Beetner family’s generous gift to sustain our student organization activities,” said Dean Cem Karacal, PhD. “We currently have 35 student organizations, all of which need resources to organize events, community outreach projects, and attend regional and national competitions and conferences.

“Furthermore, many of our competition teams need funds to purchase materials and devices to build their designs,” Karacal said. “These are noncredit extracurricular activities completely driven by students, so funding is difficult to secure.”

The Beetner family’s SIUE roots run deep, with three generations of family members that have experienced the value of SIUE as students and employees.

“We want to help others reap the benefits of a great education,” said Daryl Beetner, PhD, who earned a bachelor’s in electrical engineering from SIUE in 1990. From 1997-98, he was a visiting professor in SIUE’s Department of Electrical and Computer Engineering. Daryl was inducted into the SIUE Alumni Hall of Fame in 2015.

“Student design competitions, like the solar car, formula race car or robotics team, are an outstanding way to develop both technical and soft skills,” Daryl explained. “Students get to do the kind of work that motivated them to become engineers in the first place.”

Daryl’s father Emmet Beetner also has a long history with SIUE as an employee and administrator adding value in multiple roles since 1969. He retired in 2001, but remains associated with the University, working part-time at the SIUE East St. Louis Center.

“My college major was engineering, and my interest has continued even though my career path took me in different directions,” Emmet said. “There is great value in student projects and competitions. Our endowment will aid such opportunities by providing some financing for project materials and travel costs to off-campus locations.”

“Students involved in extracurricular organizations definitely shine among competitors and are rapidly recruited, because of their improved skills,” concluded Karacal. “Thanks to the Beetner family, SIUE School of Engineering students will have increased experiential learning opportunities.”

PROJECT COMPLETION MAKES SPACE FOR STUDENT DESIGN AND INNOVATION

With a continued focus on student success through academic excellence and technical preparation, the School of Engineering opened the state-of-the-art Fowler Student Design Center (FSDC) and the Grady Foundation Innovation Loft in October. Project completion was made possible by a generous $1.25 million gift from the Fowler Family, combined with contributions from major donors, including Ed Grady, BS civil engineering ’72, Ralph Korte, BS business ’68, and Nidec Corporation.

The FSDC provides much-needed space for students involved in senior design projects, collegiate competition teams, clubs and organizations. The two-story, 14,000-square-foot addition to the Engineering Building includes design team workspaces, facilities for prototyping and collaboration, and a conference center.

“As a student, I sat in the atrium of the Engineering Building studying for finals while other students were working on solar cars and Baja cars right across from me,” said Jonathan Fowler, BS electrical engineering ’10. “It’s not easy to focus when all that is going on around you.”

The Fowler Family is a longtime supporter of the School, witnessing its rapid advancement as a premier educational institution, as well as the University’s growth as a regional destination.

“SIUE has meant a lot to our family through the years,” Fowler said. “When my grandfather brought JF Electric to Edwardsville, some of the first jobs completed were on this campus.”

The Fowler Family annually presents the James C. Fowler Scholarship to deserving students in the Schools of Engineering and Business. Additionally, Jonathan Fowler serves on the School of Engineering’s Advisory Board.

Grady, who laid the foundation for the project’s success by making the first private donation of $300,000, contributed an additional $400,000 for the reconceptualization and design of the innovation loft.

Designed with student input, the agile, reconfigurable space supports collaboration and innovation for the School’s extensive array of project teams. The loft features six collaboration zones that include projection screens, mobile wirelessly connected flat screen displays, mobile white boards and writable wall surfaces.

“We helped decide on the type of furniture that would be best for moving around in different configurations,” said Holly Liebel, a senior mechanical engineering major and president of the Joint Engineering Student Council. “This is a great space for students to come up with ideas, work out their designs, and then go downstairs and make those ideas come true.”

Grady, also a member of the School’s Advisory Board, additionally donated $300,000 to create two endowed scholarships to support entrepreneurship among engineering and business students.

“I credit the hands-on, practical education from the School of Engineering for much of the success I’ve had in my career,” Grady said. “I’m confident that the FSDC and our endowment will continue to reinforce this experience for students and faculty moving forward.”

FACILITY IMPROVEMENTS INTEGRAL TO ENHANCING EDUCATION

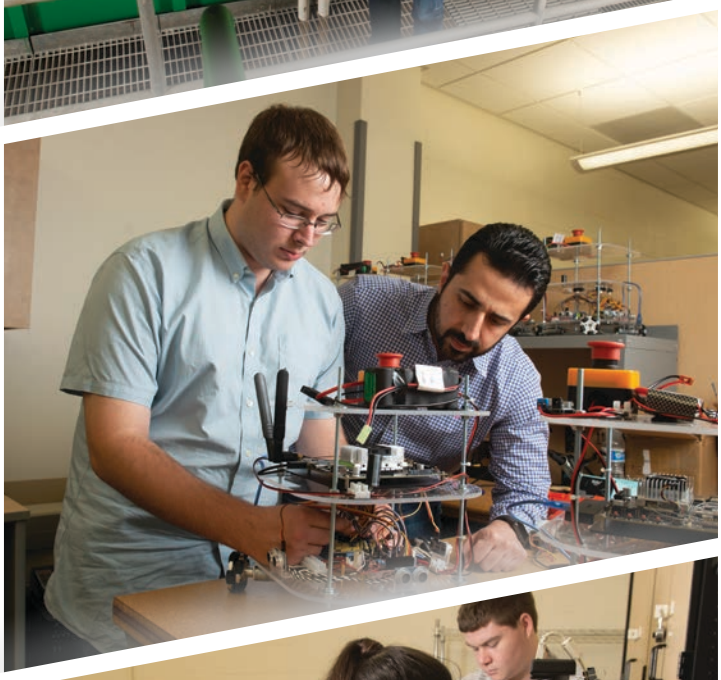
Continual updates to the School of Engineering's facilities are integral to the School's focus on providing students with an outstanding education. Recent upgrades include:

ERTC Facility Update

Through a **$1,232,790 interagency agreement between the Environmental Resources Training Center (ERTC) and the Illinois Environmental Protection Agency,** numerous upgrades have been made at the ERTC. Eleven steel tanks in the pilot plant were rehabilitated. This included sandblasting, internal painting with Tnemec protective coating and external painting. Additionally, fiberglass inserts were fabricated for two tank weirs.

Mechatronics Lab

The mechatronics lab in the Department of Mechanical Engineering houses multiple research projects, including development of a swarm of omni-directional ground robots, a 3D printer robot, a telepresence robot, and a swarm of aerial robots, or drones. **Seating capacity for this popular lab was nearly doubled** last year. Through continual upgrades to equipment and innovative projects, the lab provides cutting-edge learning experiences.



Microfluidics Lab

The microfluidics lab houses tools for fabrication of microfluidic chips and is equipped with a plasma instrument, aligning tools, fluidic pumps, and various instruments for testing and characterization of microfluidic devices. **Microfluidics has the potential to revolutionize medical diagnosis and treatment** by enabling the replacement of full-size centralized laboratories with disposable point-of-care diagnostic devices.

Soils Lab

Upgrades have been made to the shake table in the soils lab, which is jointly shared by the Departments of Civil and Mechanical Engineering. Updates allow for conducting of dynamic tests for analyses of geotechnical structures and include accessories and laminar box; digital controls; and sensors such as pore water pressure sensors and strain gauges.

ACCOLADES ABOUND FOR ELECTRICAL ENGINEERING ALUMNA

In 2019, Myesha McClendon, BS electrical engineering '04, was named to *Crain's Chicago Business* 40 Under 40, the *Engineering News Record National* Top 20 Under 40, and *Engineering News Record Midwest* Top 20 Under 40. McClendon is vice president of aviation at Milhouse Engineering and Construction, a Chicago-based firm that has been named among "Chicago's 101 Best and Brightest Companies to Work For" for 14 consecutive years.

> **"My ultimate goal is to be a better Myesha today than I was yesterday, and that means making hard decisions and self-sacrifice, putting in hard work and extra time to achieve that greatness."**
>
> **- Myesha McClendon, BS electrical engineering '04, Vice President, East Region at Milhouse Engineering and Construction**

"These recognitions truly validate my hard work, both professionally and as a student," McClendon said. "As an electrical engineering major with a minor in computer science, I definitely recall times my friends were going to parties and I was going to the computer lab to figure out why my code wasn't working."

McClendon remembers challenges she faced as a female engineering student at a time when she would frequently be the only female in a class of 30 students. In particular, she recalled an independent lab with George Engel, DSc, professor of electrical and computer engineering, where she took her time to carefully construct an electrical outlet in order to avoid errors.

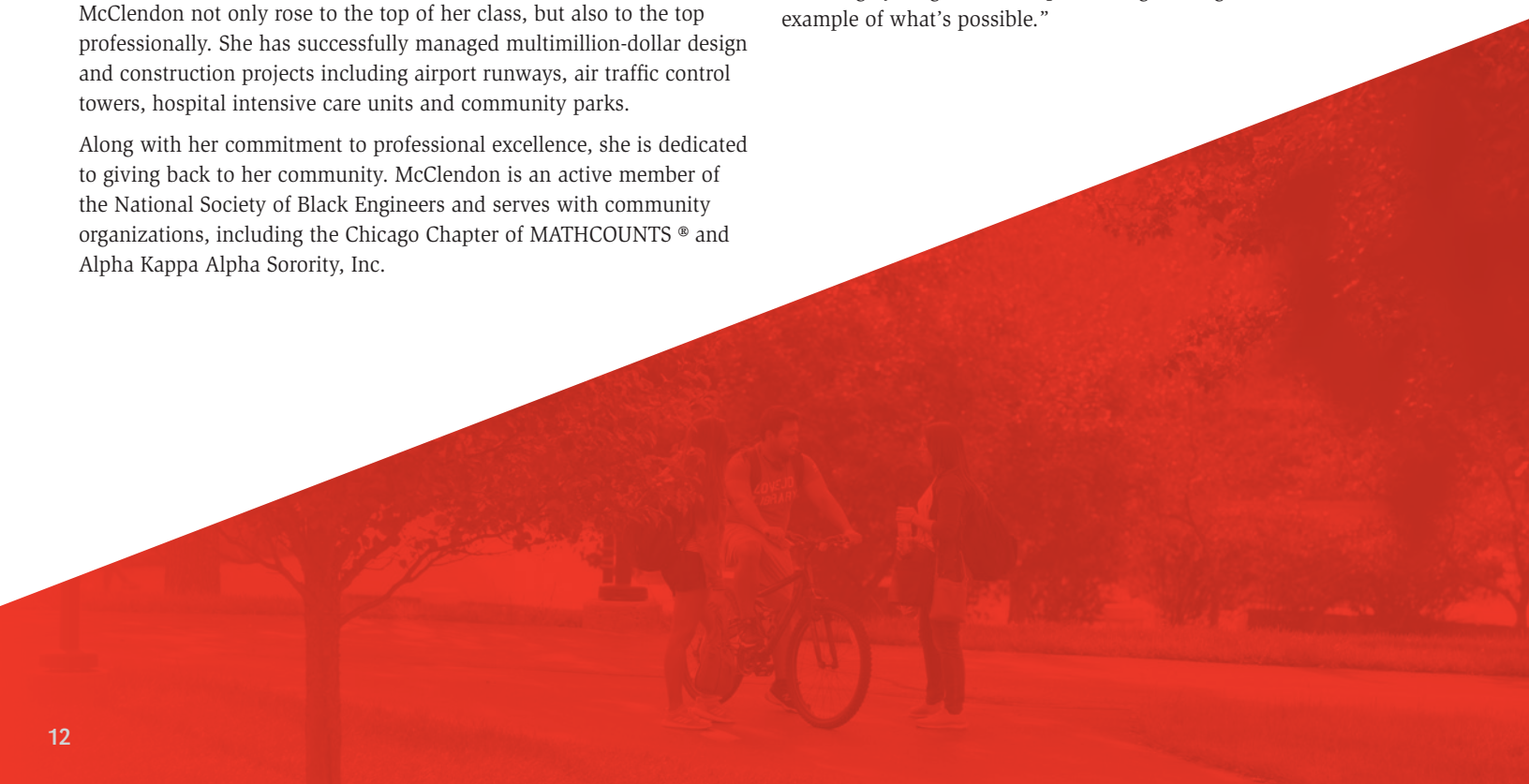
"The guys in class said I was being 'picky' and 'such a girl,'" McClendon said. "I told them, 'No, I'm being an engineer.' They were very upset when my outlet worked the first time I tried it."

McClendon not only rose to the top of her class, but also to the top professionally. She has successfully managed multimillion-dollar design and construction projects including airport runways, air traffic control towers, hospital intensive care units and community parks.

Along with her commitment to professional excellence, she is dedicated to giving back to her community. McClendon is an active member of the National Society of Black Engineers and serves with community organizations, including the Chicago Chapter of MATHCOUNTS ® and Alpha Kappa Alpha Sorority, Inc.

"You have to give back," she said. "It's what was done for me as a child, and that helped mold me into the person I've become today. Part of my motivation is knowing that even 10 minutes of my time could change the trajectory of someone's life.

"It's still truly a male dominated world, so I'm excited to be able to encourage young women to pursue engineering and to serve as an example of what's possible."



SIUE ALUMNI HALL OF FAME

The newest member of the Alumni Hall of Fame in the School of Engineering is Ted Pruess, PE, FSEI, a structural design engineer with 40 years of experience. He earned his bachelor's and master's in civil engineering in 1982 and 1986, respectively. He started his own firm in 2013 and has been an adjunct faculty member in the Department of Civil Engineering since 1995.

Pruess served as the structural engineering representative on the Missouri Seismic Safety Commission for nine years. Additionally, he received the Otto Nuttli Award for lifetime achievement in seismic hazard mitigation, was named a Structural Engineering Institute Fellow, and was an invited speaker at the Tyumen Institute of Architectural and Civil Engineering in Tyumen, Russian Federation. As a volunteer for the State of Missouri Emergency Agency, he developed a seven-hour training course for the evaluation of buildings damaged by natural disasters.

> "While being an engineer is a technical skill, you always have to remember to have compassion and understanding for both those you work with and for the general public."
>
> - Ted Pruess, BS Civil Engineering '82, MS Civil Engineering '86

PERRYMAN NAMED AMONG 40 UNDER 40

Ryan Perryman, BS construction management '04, was named to the *St. Louis Business Journal's* exclusive 40 Under 40 Class of 2019. As vice president of building at L. Keeley Construction, Perryman leads a team of business development, design, pre-construction and operations personnel.

He is committed to leading with honesty, respect, commitment and passion. An active proponent for the University, he is a member of the Alumni Association Board of Directors and the School of Engineering Advisory Board. Additionally, he earned the 2017 Construction Leadership Institute Alumni Leadership Award in recognition of his exceptional leadership and service to the St. Louis area building community.

> "SIUE has had a significant impact on my life. Remaining an active alumnus is a way for me to start giving back to a place that has given me so much."
>
> - Ryan Perryman, BS Construction Management '04,
> Vice President of L. Keeley Construction

AHLERS NAMED TO 30 UNDER 30

Andrew Ahlers, BS construction management '13, was named to the *St. Louis Business Journal's* coveted 30 under 30 class of 2019. Currently, he works as a project manager for S.M. Wilson, where he primarily works on healthcare projects. He is responsible for scheduling, planning and coordinating construction throughout the delivery, as well as communicating with the owner and team.

"I have always been passionate about leadership," Ahlers said. "I'm driven to lead and find construction management to be a natural fit."

For Ahlers, becoming a leader with integrity and excellence is his ultimate goal. While leading by example, he hopes to build up his teammates through encouragement and positivity.

> "SIUE was fundamental in preparing me for my professional journey. The construction management program focuses on a unique blend of engineering and business. The field is continuously changing, but these skills have served as an excellent foundation for my personal development."
>
> - Andrew Ahlers, BS Construction Management '13, Project Manager at S.M. Wilson

The complete list of IPAC and advisory board members can be viewed at: siue.edu/engineering/about

Leslie Stallons
BS Civil Engineering '12
Engineering Supervisor, MiTek Inc.
Civil Engineering Industrial and Professional Advisory Council (IPAC)

Describe your relationship with the SIUE School of Engineering.

It all started with becoming involved in the School's career fairs at SIUE, which led to attending the School's mentoring sessions and open houses. I'm a senior design group mentor; I lead an engineering camp each summer; and I've given a guest lecture for Advanced Structural Analysis, a course involving a project using MiTek software. Most recently, I was a judge for the 2nd Annual Energy Symposium led by Serdar Celik, PhD, professor in the Department of Mechanical Engineering.

How long have you been involved in this way?

I've been continuously involved with the School in one way or another since I graduated, so roughly seven and a half years now.

Why do you serve on this board?

Attending SIUE was one of the best, most monumental decisions I've ever made in my life. Being on the IPAC Committee provides an amazing way in which I'm able to give back to the University that provided me with so much opportunity. I enjoy being able to help mentor students and have a positive impact on the up-and-coming generation of new engineers.

What are the School's strengths? How does the School benefit this region?

Some of the School's greatest strengths include the low student-to-professor ratio, proximity to St. Louis, and the fact that the School makes it a priority to have great working relationships with companies in the St. Louis Metro area. The professors genuinely care about students as individuals and will do everything they can to help them succeed. SIUE benefits the region by the great quality of engineering graduates and by building relationships with companies in the area, they have created an invaluable channel of talent.

What challenges is your industry currently facing?

The biggest challenge the truss industry is facing right now is a labor shortage.

How is the School addressing those challenges?

Due to the ever-growing labor shortage, automation is on the rise. SIUE is helping address this challenge by preparing mechanical engineers who are able to step into the forefront of the automation field.

Melissa Glauber
BS Mechanical Engineering '03 (Basler's Chancellor Scholarship)
Patent Prosecution Professional, The Boeing Company
School of Engineering Industrial Advisory Board

Describe your relationship with the SIUE School of Engineering.

I have been a member of the School of Engineering Industrial Advisory Board since 2009. I serve on the Bylaw Committee of the board. During the School's Explore Day each year, I spend time at the Boeing table talking with prospective students and their families about SIUE and the engineering industry. Over the years, I have participated in Women in Engineering and other industry panels. Annually, I sponsor students to attend the awards banquet.

Why do you serve on this board?

My experience at the School prepared me to tackle the challenges of intellectual property law. The approach to problem solving that I learned has helped me throughout law school and in the legal industry. The breadth and depth of the technology I've learned helps me discuss cutting-edge innovations with inventors across almost all areas of science and technology. I serve on the board to provide a point of view from someone who took their engineering degree and built upon it in another field, namely the legal field.

Are you involved with the University in other ways?

I was on the SIUE Alumni Association Board from 2008-2014, serving as its vice president from 2012-2014. I continue to be an Industrial Advisory Board member and participate in SIUE's mentoring programs.

What are the School's best strengths?

I chose SIUE due to the close-knit community of students, faculty and staff. Students can get to know their professors and vice versa. The ability to be involved in the campus community, student projects, and academic projects produces graduates who are able to enter the work force and excel in their chosen field.

What challenges is your industry currently facing?

In the patent law area, it's important for engineers to recognize that they create intellectual property and need to protect it. It's also important for engineers to see themselves as innovators and inventors who continue pushing technical developments in every field. Every problem an engineer solves is potentially the next step forward in innovation. The challenge is helping engineers understand that they aren't just solving a problem, they are inventing.

How is the School addressing those challenges?

With the School's new Fowler Student Design Center, students can solve problems and develop new technology. I'm very excited about the programs that will be held in the Grady Foundation Innovation Loft to spur innovation and entrepreneurship. The focus on innovation and building businesses around intellectual property will develop a new generation of engineers that are internet protocol and business savvy.

FRIENDS OF ENGINEERING DONOR LIST

The faculty, staff and students of the School of Engineering extend sincere appreciation to our alumni, friends, corporate partners, foundations and organizations who contributed to the School in fiscal year 2019. We are grateful for your investment. On behalf of everyone at the School, thank you for making a difference in the lives of our future engineers, computer scientists and construction managers.

Sincerely,
Cem Karacal, Dean,
School of Engineering

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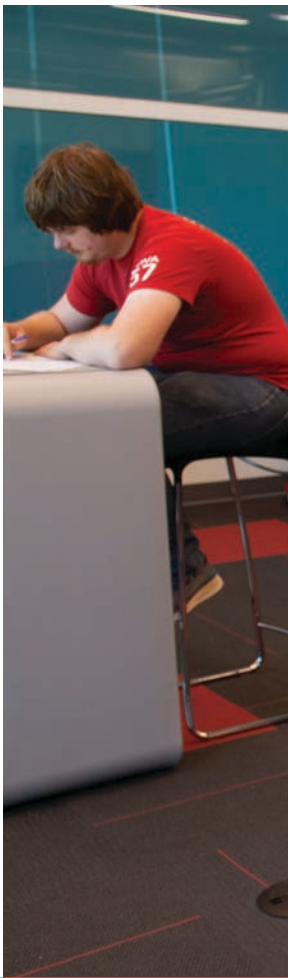

Scholarships

The School of Engineering is consistently one of the most affordable engineering programs in the region. Students can find additional financial opportunities through scholarships. The Dean's goal is to increase annual scholarship awards from $60,000 to $150,000.

Naming Opportunities

This issue of 3E highlights newly named spaces to honor and thank donors. From the main auditorium to conference rooms to labs, various areas throughout the School are available to proudly display appreciation of donors' support.

Endowed Student Organization Funds

The School of Engineering currently has 35 student organizations, all of which need resources to organize events, community outreach projects, and attend regional and national conferences. Endowed gifts ensure these student-led groups can pursue extra-curricular activities that provide them with the competitive edge and leadership skills to successfully enter the workforce.

How to Give

Make a gift to the School of Engineering using the attached envelope or by contacting the Office of the Dean at 618-650-2541.

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