



ENGINEERING EXPERIENCE Dean's Report 2017

siue.edu/engineering

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE
SCHOOL OF ENGINEERING



MESSAGE FROM THE DEAN

Studies have shown that college graduates with practical experience have an advantage in securing employment after graduation. Understanding this, the SIUE School of Engineering strives to provide our students with experiential learning to prepare them for their lives after graduation.

When I speak with the managers who hire our students, I am assured that this effort is being recognized and sets our graduates apart. I continue to hear that employers like to hire our graduates, because they not only know theory and design, but also how to build and fabricate.

I am happy to report we received two very generous gifts in 2017 that will enable us to continue providing our students with strong educational opportunities.

- Phase 2 of construction our new our Student Design Center is now on the fast track for completion due to the generosity of a local family business.
- The School was able to create an endowed scholarship fund in entrepreneurship that will help annually recognize an engineering and a business student with an entrepreneurial ambition through a generous contribution from one of our outstanding alumni.

Our engineering community is a source of great pride for me. Whether you contribute financial support, teach our students, serve on boards, provide internships for our student or offer jobs to our graduates, we are grateful for your support. Our combined efforts have brought success to the School.

- Our fall 2017 enrollment figures reached a record high.
- The ACT math and composite scores of the freshman class also reached record highs.
- Our faculty and students are bringing recognition to our School with their achievements and awards.

To learn how you can be a part of these efforts, please contact our director of development, Chandler Vandenberg, at cvanden@siue.edu. Thank you for your ongoing support and interest in the success of our School.

Sincerely,

Cem Karacal, PhD
Dean

SCHOOL OF ENGINEERING MISSION

The mission of the School of Engineering is to provide excellent innovative engineering, computer science and construction education to citizens of Illinois, the greater St. Louis metropolitan area and representatives of the global community. The School focuses on strong undergraduate education and graduate programs that serve the needs of full-time students and employed professionals. The faculty conducts basic and applied research and outreach activities in partnership with others who contribute to technological advancement in our fields.

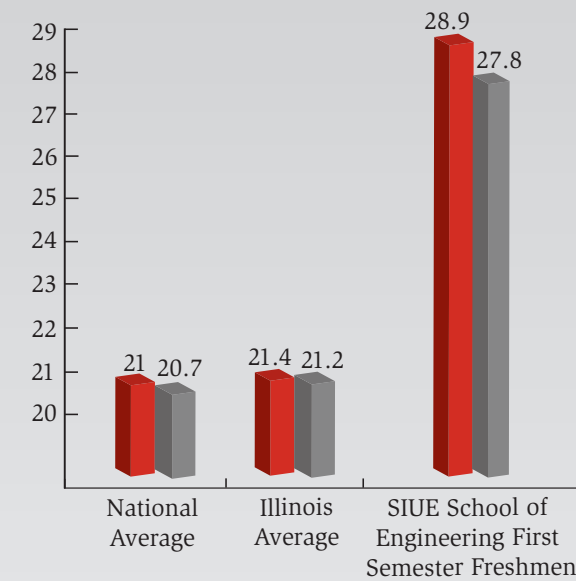
ABOUT THE SCHOOL OF ENGINEERING

Increasingly high enrollment, rising academic qualifications of applicants, and a nearly 100 percent 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 percent of our graduates have taken positions in the St. Louis metro area.

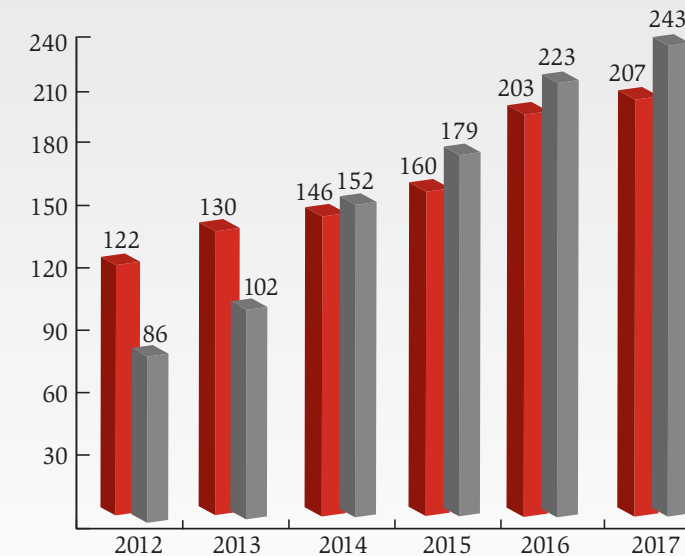
2017 ACT Scores

■ ACT Math ■ ACT Composite



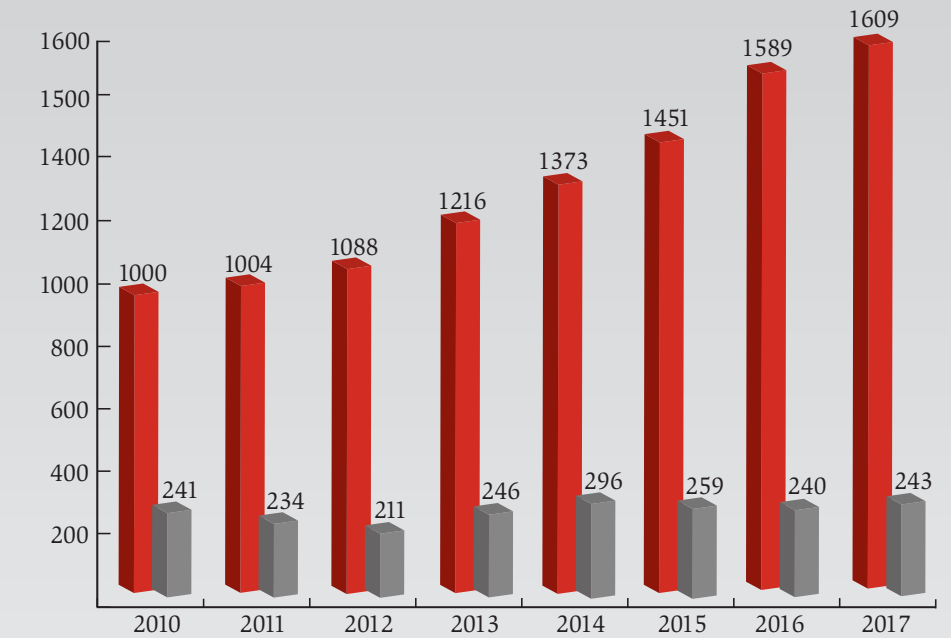
Minority and Female Undergraduate Enrollment

■ Female ■ Minority



Record Enrollment

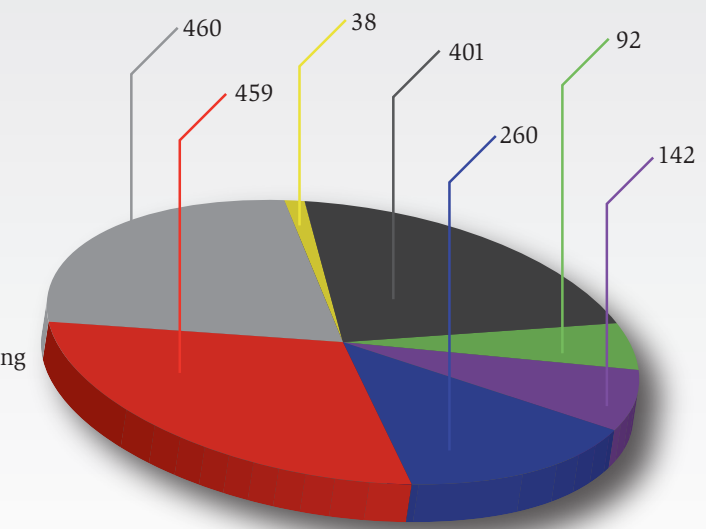
■ Undergraduate ■ Graduate



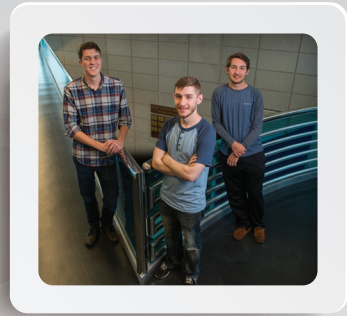
Undergraduate and Graduate Enrollment by Program

Program	Undergraduate	Graduate	Cooperative PhD
Mechanical Engineering	403	46	10
Computer Science	432	25	3
Mechatronics and Robotics Engineering	38	0	0
Electrical and Computer Engineering	331	68	2
Construction Management	92	0	0
Industrial Engineering	103	39	0
Civil Engineering	210	49	1

- Mechanical Engineering
- Computer Science
- Mechatronics and Robotics Engineering
- Electrical and Computer Engineering
- Construction Management
- Industrial Engineering
- Civil Engineering



TRIO "HACKS" WAY TO VICTORY IN PROGRAMMING COMPETITION



In March, three School of Engineering students "hacked" their way to victory at the second annual eHacks competition.

In the hackathon, held at the T-REX Innovation Center in downtown St. Louis, Thomas Lynch and Eli Ball, of Rockford, and Daniel

Harding, of Glen Carbon, took first prize for their innovative programming project, Photo Code.

Photo Code proposed a new, interactive, rewarding and budget-friendly way to introduce grade-school students to the fundamental concepts of computer programming.

"A lot of schools don't have enough resources to teach programming or have difficulty getting programming software on computers they do have," Ball said.

"We wanted to come up with a way to teach students how to program using minimal resources with as much hands-on involvement as possible," Lynch said. "Instead of needing a classroom full of computers to teach programming, you only need one computer, a camera and some paper."

The product works by printing sheets of paper and cutting them into small pieces. Each piece contains one word from a simple programming language. The trio created a program that allows users to upload an image of the paper arrangement. The program will scan and detect all of the keywords by finding a QR code on each piece of paper. The program then simulates the code so the users can observe the results.

"The competition had so many impressive projects, that when it was announced that we won first place, I was completely shocked," Harding said.

Dennis Bouvier, PhD, associate professor of computer science, along with a group of dedicated engineering students and faculty members, are currently planning the next eHacks competition in March 2018.

SOLAR CAR TEAM RACES TO TOP 10 FINISH

The School of Engineering's Solar Car Team celebrated its first top 10 finish in the Formula Sun Grand Prix (FSGP) held July 2-8 in Austin, Texas. After passing grueling "scrutineering," or inspections, and racing on a 3.426-mile track, the team achieved its best placement yet at 10th among 18 teams from such institutions as University of California, Berkeley; Georgia Tech and Northwestern.

"We are incredibly proud of the team," said advisor Andy Lozowski, PhD, professor of electrical and computer engineering. "They built the vehicle with limited funding that they budgeted and spent carefully. They hand wired everything themselves, and they solicited donated specialized materials and parts from suppliers and recycled components from other teams."

The team included 11 students, five alumni and two faculty advisors. NOVA, the solar car, is built to operate only on energy stored in batteries that are charged by the attached solar array.

The FSGP exposed participants to a high-stakes competition where quick, critical thinking was imperative. SIUE's team proved its perseverance as it made modifications on site that led to its successful results.



"Our whole project is about designing, building and racing solar cars, solely on our own."

**Triston Cooper, Senior, Electrical Engineering, Lincoln
SIUE Solar Car Team Project Director**

BAJA TEAM BUILDING EXPERIENCE AND NETWORKS

The SIUE Cougar Baja Team, now in its 11th year, continues to make adjustments and learn from past competitions to build a better, lighter, faster and more competitive off-road vehicle. In May, the team introduced their new car just in time to compete at the Baja SAE (Society of Automotive Engineers) competition in Pittsburg, Kan.

Comprised of mostly undergraduate engineering students, the team designs, funds, builds and races the reduced-scale, off-road mini Baja car. The team races at events around the country each year, competing against schools from around the globe. In addition to Kansas, the team also recently competed in Peoria, Louisville, Ky.; Eau Claire, Wis.; and Menomonie, Wis., where they placed seventh overall.

Throughout the process, students build professional and academic networks, and get connected to the latest trends and technological innovations. They learn problem-solving, communication, teamwork and leadership skills that build their resumes and prepare them for the workforce.

"Employers look for students with experience, and many global companies hire students for internships and full-time positions on site during Baja SAE competitions," said Tim

Talbert, a senior mechanical engineering major from Hebron. "These companies know that the students attending these competitions have the hands-on experience that will make them a valuable asset from the start of their career."



ENGTEC PROVIDES UNIQUE INTERNSHIP OPPORTUNITY

ENGTEC, an industry outreach initiative of the School of Engineering, offers unique and extensive engineering capabilities to private sector employers in southern Illinois and the St. Louis region who have an interest in a mutually beneficial partnering experience with the School. One such opportunity is the ENGTEC internship program, which was developed to connect industry members with students and faculty to enhance the experiential learning culture within the School.

In June, industrial engineering sophomore Kyler Lockhart, of Hanna City, began an ENGTEC internship with Schnuck Markets, Inc., a St. Louis-based supermarket chain. Lockhart works with faculty advisor Xin Chen, PhD, associate professor of industrial engineering, along with colleagues in Schnucks' industrial engineering department.

The goal of the internship is to apply industrial engineering skills, including time studies, data analytics and optimization, to help Schnucks improve efficiency and productivity and strengthen their competitive advantages. Lockhart has worked on three different scheduling operations projects in two departments at various stores. She recently embarked on a new project to update labor standards in all departments at Schnucks.

“The most valuable thing Kyler has added to our department is bandwidth,” said Ric Resendez, manager of industrial engineering for Schnucks. “She hit the ground running from day one and is an important part of our team. I have plenty for her to do in 2018.”

Chen said the internship builds on a long-standing collaboration between Schnucks and SIUE. “Several industrial engineering alumni now work at Schnucks, and some of their senior managers serve on the School's advisory councils,” Chen said. “The ENGTEC internship further expands this relationship and provides SIUE students excellent opportunities to work with industrial leaders while advancing their education.”

Lockhart enjoys the opportunities she is afforded through this internship and feels it is giving her a leg up both academically and professionally.

“I'm working side-by-side with the industrial engineering team, experiencing things I haven't yet studied in class,” Lockhart said. “At the same time, I'm able to fall back on Dr. Chen as my mentor for any questions along the way.”

“The ENGTEC internship provides our students with excellent opportunities to work with industrial leaders while advancing their education.”

*Xin Chen, PhD,
Associate Professor of
Industrial Engineering*



THE POWER OF PARTNERSHIP

Headquartered in Highland, Basler Electric is a leading manufacturer of products supporting the global power industry since 1942. The privately held corporation provides a wide range of products for the control and management of electric power, as well as specializing in injection molding of plastic components, and custom transformer design.

Mike Basler, manager of electrical engineering for Basler Electric, joined the company in 1981, just before the company converted from analog-based controls to digital-based controls.

“As we integrated the digital-based controls, our design was good, but complex. We didn't have a good way to tell our customers how to set up our product,” Basler said.

Enter the School of Engineering. Basler Electric commissioned Arjun Godhwani, PhD, professor emeritus of electrical engineering, to assist in developing a program to simplify customer set-up. Since then, the company has continued utilizing the background and talents of SIUE faculty members and graduate students as the company develops into new technology areas.

Basler Electric employees also commonly continue their education at the School. “A tremendous number of people who started off here as lab technicians went to SIUE to earn their engineering degrees, and many have gone on to earn master's degrees in engineering,” Basler said. “The fact that we are 20 minutes away from a major university with an excellent engineering program is a huge asset.”

Along with learning, numerous Basler Electric employees are also teaching. Several engineers, including Basler, have taught or currently teach, in the Department of Electrical and Computer Engineering. Basler believes the value of the education engineering students receive increases significantly through the addition of Basler Electric engineers as instructors. Students receive both sound, theoretical background from full-time faculty and practical background from people who work in the field.

Many SIUE engineering students and graduates find co-op opportunities and full-time positions at Basler Electric. “SIUE graduates are among our best employees in design engineering and engineering management,” Basler said.

“When we have tough technical problems, the School of Engineering is a resource of incredible knowledge and talent, whether that's in the form of faculty or students.”
Mike Basler, Manager of Electrical Engineering, Basler Electric





STUDENTS GAIN WEALTH OF EXPERIENCE THROUGH PARTNERSHIP

In July, 12 engineering students and two faculty members visited Tongmyong University (TU), of Busan, South Korea, for a two-week study abroad course where they worked on joint design projects with TU students. The course emphasized design of products based on 3D-modeling and finite element analysis.

“When SIUE students visit TU, they get to learn not only technical content, but also are exposed to international cultures, which will be highly beneficial when they are involved with international projects in the future,” said Soondo Kweon, PhD, assistant professor of mechanical and industrial engineering.

The student exchange trips are one of the ways SIUE and TU strengthen ties. The schools also partner on a 2 + 2 dual-diploma program, which began in 2014 and offers South Korean students the opportunity to earn a degree from both universities. The dual-diploma program provides for faculty exchange, summer programs and cooperative research. Each summer, TU sends 10-20 students to the ESLi Center, a partnership between SIUE and English as a Second Language International (ESLi).

Each December, a TU senior design team of students, faculty and staff spends two days at the School of Engineering for a senior design collaboration. They present their team design outcomes to mechanical and industrial engineering students, and participate in various activities at SIUE during the visit.

The study abroad program will be offered again on the TU campus in summer 2018.

“The wealth of experiential learning opportunities provided in both engineering schools presents a good match between the two institutions,” said Cem Karacal, PhD, dean of the SIUE School of Engineering. “This joint degree program is a mutually beneficial collaboration. It is an excellent way to share engineering knowledge and know-how between nations, and it also presents a tremendous opportunity for students to learn about each other’s cultures, values and languages.”

“Having the opportunity to collaborate on a project with individuals from a different background was a valuable experience that I know will be useful in my future career.”

Elizabeth Ringhausen, Senior, Mechanical Engineering, Jerseyville

CONSTRUCTOR’S CLUB BUILDING OUTSTANDING REPUTATION

Of more than 170 Associated General Contractors of America (AGC) student chapters across the country, the School of Engineering’s Constructors Club received third place in the 2016 AGC Outstanding Student Chapter Contest. The award symbolizes dedication to the enrichment of construction education through community service.

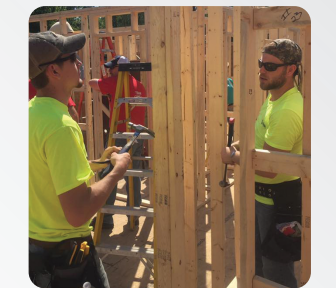
“SIUE students are the future of our industry, and we look forward to what they will bring to the world of construction,” said Paige Packard, AGC associate director/building division, in the award notification. “Your portfolio of community service projects, partnership with your local chapter and participation in national events are excellent examples of student chapter leadership and service.”

The Constructors Club was also featured in *Constructor* magazine for the impact it is making through a series of outstanding philanthropic efforts. The club has received the SIUE Kimmel Outstanding Community Service Project Award for the past three years in recognition of its active volunteerism.

From weekends to spring break, club members volunteer their time and talents for worthy construction projects. Projects completed over the last year include:

- SIUE Early Childhood Center playground installation
- SIUE School of Pharmacy paver project
- A trip to Florida for Habitat for Humanity
- Dennis H. Rinderer Memorial Park roofing project
- East Side Heart and Home Family Center’s home-building blitz in East St. Louis

“The Constructors Club and SIUE are committed to giving back to the community and helping others in need,” said senior construction major Drew Westerhold of Edwardsville. “Our club is unique, because we are all very close and always willing to help out in any way we can. We try to teach our members how to become better individuals and better prepare them for the construction industry upon graduation.”



The Constructors Club has 35 active members led by club president Cody Kruse, a senior from Highland, senior Jordan Grant, vice president from Peoria, Junior Kyle Vahling, secretary from Freeburg, and senior Yelana Moton, treasurer from East St. Louis.



PHASE I OF STUDENT DESIGN CENTER OPENS FOR STUDENTS

The School of Engineering's new, partially finished, Student Design Center opened in September to offer students an expansive applied learning environment. The two-story, 14,000-square-foot facility is attached to the existing Engineering Building.

"As the fall semester began, it was exciting to see students utilizing this impressive workspace as they worked on an array of special projects and prepared for another year of academic competitions," said Brent Vaughn, PE, laboratory specialist and lecturer, who is overseeing operations at the Student Design Center. "The space will also be used for capstone senior design projects that require design, fabrication and assembly."

"The Student Design Center is incredible," said Triston Cooper, of Lincoln, a senior electrical engineering student and project director of the SIUE Solar Car Team. "Before we had the Student Design Center, our solar car team had to scramble around the Engineering Building to find space."

"We appreciate the openness of this new work space and the access we now have to tools. It's also helping with our recruitment efforts, since people can see us at work!"

Among the student organizations benefiting from the Student Design Center are Solar Car, Cougar Baja, Formula SAE and IEEE Robotics, as well as the Steel Bridge, Concrete Canoe and GeoWall Teams.

"In previous years, we had a little shop set up on the other side of campus," said Seth Kirchner, of Chillicothe, a senior mechanical engineering student and president of the Cougar Baja Team. "It made it difficult, because we didn't have all of the supplies we needed for the team to be successful. Now, we will be able to use the machine shop in the back side of the new addition, and share shop space where we can build our cars from scratch."

Most of the \$5.7 million needed for this project has been secured resulting in the completion of Phase 1 of construction. The School still needs \$1.3 million to fund the construction of Phase 2, which will include additional design labs, offices and meeting space on the building's second floor.

"We look forward to sharing our appreciation for the donors who have made this space possible thus far, and hope to facilitate new partnerships with businesses and individuals to help support our robust engineering programs and facilities," said Chandler Vandenberg, director of development.



For more information, visit
siue.edu/student-design-center.



FOWLER THROWS SUPPORT BEHIND SCHOOL, STUDENT DESIGN CENTER



Jonathan Fowler, BS electrical engineering '10, never questioned that he would pursue a career in electrical engineering. Brought up in the family business, Edwardsville-based J.F. Electric, Fowler worked part-time as a warehouse employee throughout high school.

His desire to continue learning the business while earning his degree made the School of Engineering an obvious choice. While at SIUE,

he advanced his career by becoming more involved in project management.

Fowler recalled faculty relationships as the most meaningful part of his experience in the School. One particular faculty member spoke to him frankly about putting forth his best effort to become a leader in the family business, which Fowler says was pivotal in shaping his work ethic.

Now a vice president at J.F. Electric, Fowler is committed to staying involved with his alma mater. He serves on the Electrical and Computer Engineering Advisory Board, as well as the advisory team for the new Student Design Center project.

"I want to help provide School of Engineering students with the best environment possible for learning and academic success," he said.

During his time as a student, Fowler remembers trying to study in the atrium while student competition teams worked on the solar car in the same space. Students were also limited on the senior design projects they choose due to limited work space.

"The new Student Design Center provides students the space and resources they need," he said. "They compete at a national level against some of the most well-respected engineering schools in the country, and now they have the space to work on projects with little to no limitations."

Fowler encourages fellow alumni, as well as community members and area businesses, to support the completion of the Student Design Center.

"So many graduates stay in the region," Fowler said. "By helping SIUE attract the highest quality students from around the world, we are attracting valuable community members and future community leaders."

WANG HONORED WITH VAUGHNIE LINDSAY NEW INVESTIGATOR AWARD



Power generation technology such as wind and solar energy conversion systems could save consumers money and reduce pollution. However, if significant faults are detected, household-distributed power generation systems are set to disconnect from the grid.

These outages are a headache for homeowners and could also upset the network's delicate power balance, potentially blacking out an entire region.

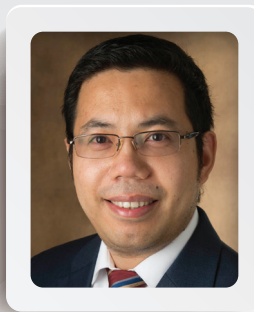
For his intuitive solution to this issue, Xin Wang, PhD, assistant professor of electrical and computer engineering, was honored with the 2017-18 SIUE

Vaughnie Lindsay New Investigator Award for his project proposal, "Ushering in the Smart and Autonomous Power Converters for Utility Power Grid."

"As more renewable energy resources supply electrical power to the utility grid, there is an emerging trend of deploying smart and autonomous power converters," Wang explained. "The proposed technology will provide a better solution for the next generation power grid."

A combined \$12,500 award from the Graduate School and School of Engineering will allow Wang to develop two converters that can keep the power grid stable when power is coming from solar, wind or other power generation sources.

HUANG HONORED WITH URCA RESEARCH MENTOR OF THE SEMESTER AWARD



The School of Engineering works diligently to provide a supportive environment where students, faculty and staff members can pursue their often innovative scholarly and professional activities. Through the University's distinctive Undergraduate Research and Creative Activities (URCA) program, students work one-on-one with faculty members on their own projects or assist faculty members with their research endeavors.

Each semester, students participating in the program have the opportunity to nominate their faculty mentors for the SIUE Vaughn Vandegriff URCA Research Mentor of the Semester Award. In spring 2017, the award was presented to Jianwei Huang, PhD, PE, assistant professor of civil engineering.

"When Dr. Huang accepted me as his URCA student last fall, I was nervous and excited at the same time," said senior engineering student Riley Hoffman. "He is the best professor and mentor I have had the pleasure of meeting at SIUE."

Huang was honored to be recognized by his URCA student. "I'm happy to know that my students enjoyed the journey of conducting their research and found it useful for their professional development.

"I am proud to work with my URCA students who are enthusiastic about learning new things and passionate about their area of study," Huang said.

"It is a privilege to be placed in such distinguished ranks as those of the past honorees who have made significant discoveries and great contributions to advancing research studies in various disciplines, and all of whom I have long admired and respected."

Xin Wang, PhD, Assistant Professor of Electrical and Computer Engineering



"SIUE's URCA program provides a platform for students to connect what they have learned in the classroom with cutting-edge research and real-world applications, which deepens their understanding of the subjects, and enhances their critical thinking and problem-solving skills."

Jianwei Huang, PhD, PE, Assistant Professor of Civil Engineering



SCHOOL RECEIVES TWO NATIONAL SCIENCE FOUNDATION AWARDS

The National Science Foundation has awarded the School of Engineering two grants through its Major Research Instrumentation program.

Custom Microchip Development

A \$204,565 grant funds a project under the direction of principal investigator George Engel, DSc, professor in the Department of Electrical and Computer Engineering. The award supports development of custom microchips that are used in experiments conducted by physicists from Washington University, Texas A&M and several other universities.

The integrated circuit design conducted in Engel's research lab involves extremely detailed work that results in the creation of tiny, powerful microchips that are approximately 5-by-7 millimeters in size. The chips are capable of replacing huge racks of electronics to conduct experiments.

The two-year grant enables Engel's research team to add features to two chips they have previously created. One chip, able to identify the type of radiation being detected, can be potentially used in handheld radiation monitors for first responders. The second allows physicists to obtain extremely precise energy measurements. A new custom chip is being designed for use in conjunction with the aforementioned chip in determining radiation type.

The design and fabrication of the microchips involves complex attention to detail and hours of careful work by Engel and his team, currently comprised of Bryan Orabutt, of Springfield, and Pohan Wang, of Taiwan, both master's candidates in the electrical engineering program.

"If you look at a magnified plot of a microchip, you can see there are about 100,000 components on it," Engel explained. "One of the wires is probably 1/25 the diameter of human hair. It's extremely intricate."

According to Engel and his graduate students, the work fits their passion for electronics, with the added bonus of having a significant impact on research and development.



Motion Capture and Analysis



A \$185,358 grant funds the acquisition of a motion capture/analysis system (MCAS) for leading-edge research and education on complex body movement analysis in medicine, sports and occupational safety. Sinan Onal, PhD, assistant professor of industrial engineering, is the principal investigator.

"For many years, the lack of state-of-the-art research instrumentation in this region has inhibited cutting-edge research on motion analysis in medicine, sports and visual art areas," Onal said. **"This MCAS system will serve as a core research and educational platform for not only the School of Engineering, but also for students throughout the SIU System and other universities in the area."**

Through collaboration, Onal expects new lines of research to emerge and stimulate new grant proposals, jointly authored papers, and educational exchanges among students and faculty from multiple campuses and institutions.

As the only industrial engineering program in the region, the School of Engineering is positioned to become the academic leader for educating the community about motion capture and analysis technology through hands-on workshops.



ALUMNUS CREDITS SCHOOL FOR BUILDING BLOCKS OF SUCCESS

After coffee with the mayor of St. Louis, Ryan Freeman, BS mechanical engineering '01, headed to St. Louis Union Station where he spoke at a groundbreaking ceremony for the 120,000-square-foot aquarium there. Next, he made his way to the St. Louis Arch where renovation to the grounds is nearing completion and museum renovation is underway.

Freeman is at the helm of each of these major projects plus more through his role as vice president of operations at McCarthy Building Companies, Inc. in St. Louis.

"I thrive on this pace," he said. "I'm happiest when I'm on the run."

That is a good thing, given that Freeman is responsible for all commercial, advanced technology and manufacturing, and local education work for McCarthy's central division. He oversees a 20-state region, leads a team of more than 50 construction professionals, and is currently responsible for \$500 million in active projects.

Freeman joined McCarthy 13 years ago as a project superintendent, was promoted to project manager, then became director of business development before assuming his current position. He was named to the *St. Louis Business Journal's* 40 Under 40 class of 2015. In 2017 he was included on *Building Design + Construction's* 40 Under 40 list.

Freeman attributes his professional success to the problem-solving and teamwork skills he gained while at SIUE and continues to rely on throughout his career.

"Whether it's a problem related to construction, logistics, human resources or equipment resources, I go back to those logical problem-solving skills I learned through the mechanical engineering curriculum," he said. "And, by working to solve problems with a group of individuals who have different perspectives and different life experiences, I reach better solutions than I would on my own."

EDUCATION AND EXPERIENCE TRANSMIT TO SUCCESS AT AMEREN

Hands-on experience gained as an aerospace engine mechanic in the Illinois Air National Guard, along with networking skills and education gained at the School of Engineering, transmitted to an excellent career opportunity for Samantha Palacios, BS mechanical engineering '17. Upon graduation, Palacios began her role as associate engineer at Ameren Transmission, one of the largest energy providers in Illinois and Missouri.

As a student, Palacios was active with the student chapter of the Society of Hispanic Professional Engineers (SHPE) and served as vice president her senior year. Through the organization, she was invited to Ameren's annual Power Hour networking event where she learned about the Fortune 500 company's impact on the region. Through further networking, Palacios landed a co-op position working in risk management at Ameren.

"Risk management involves understanding what all can go wrong in a transmission project," she said. "I viewed a lot of analytics to see where Ameren was spending money and how to improve it. It was a great way to get to know that side of Ameren."

After graduating, Palacios networked her way into a full-time position as an associate engineer for Ameren Transmission in downtown St. Louis. The division is responsible for expanding Ameren's robust system of more than 7,800 circuit miles of high-voltage transmission lines in Illinois and Missouri.

Palacios' work in transmission line design calls on many civil and electrical engineering skills. "Although I am a mechanical engineer, my education at SIUE allowed me to gain a broad knowledge of engineering as a whole, and a variety of learning techniques help me succeed across disciplines."

Recently, Palacios took over as president of SHPE's St. Louis Gateway chapter. She works with professionals from businesses and corporations around the St. Louis metropolitan area and remains highly involved with the group's student chapter at SIUE.



MIKE BLAKEY

Senior Maintenance Manager, Anheuser-Busch
Industrial Advisory Board, 8 years of service



How are you involved with the School of Engineering?

I earned my bachelor's in electrical engineering from SIUE in '96. As an employer, I have been involved with recruiting engineering students from the University for 10 years. I've been a contributing member of the advisory board since 2010.

Why do you serve on this board?

The School is an exciting place with constant improvement in student enrollment, as well as the quality and number of programs offered. Serving on the board allows me to contribute to the School's success.

What are the School's best strengths?

Some of the School's biggest strengths include the dedication of its professors, new state-of-the-art laboratories, and an engineering community culture that makes learning challenging and fun.

How is the School addressing industry challenges?

In the manufacturing industry, it's a challenge to find employment candidates who have the skills necessary to be successful. The School is dedicated to developing students not only on the technical aspects, but the communication, organization and professional skills necessary to be successful in any environment.

Show your support for the
School of Engineering by
making your online gift today!
siue.edu/give-now

CHARLES SAFF

Technical Fellow – Structures and Materials, The Boeing Company
(Retired); currently, Charles R. Saff Aerospace Consultant
Mechanical Engineering Industrial and Professional Advisory Councils (IPAC),
12 years of service



How are you involved with the School of Engineering?

In 2006, I was invited to join the mechanical engineering IPAC and have been involved since then. These have been exciting times to be involved, from supporting the School with an Accreditation Board for Engineering and Technology, Inc., (ABET) assessment, the expansion of the Engineering Building, and more recently, the construction of the Student Design Center.

How does the School benefit this region?

The design-build-test focus of the student design projects is unique among schools

of SIUE's size. The students receive valuable experience in problem solving and manufacturing lessons learned while building their own designs; experience which few other schools provide. This practical experience should benefit engineering firms throughout the western Illinois and eastern Missouri region, especially as it is built on a foundation of solid understanding of mechanical engineering principles.

How is the School addressing industry challenges?

SIUE's mechanical engineering department is addressing industry challenges through their senior design projects and graduate research programs. I have seen senior design projects addressing solar power efficiency, wind power generation, power storage concepts, clean water generation, UAVs for package delivery, UAVs for emergency health services, integration of autonomous cars into existing roadways, development of chemical measurement devices to support new medical products and many others.

MATTHEW J. PFUND

Senior Vice President, Tarlton Corporation
Construction Management Industrial and Professional Advisory Councils
(IPAC), 20 years of service



How are you involved with the School of Engineering?

Through the IPAC, I've helped with faculty interviews and selection, department support, and fundraising. At Tarlton, we have hired and retain many interns and successful graduates from the program. It is important for industry to let the School know what they are doing well so that it remains a focus, along with what needs more attention.

What are the School's best strengths?

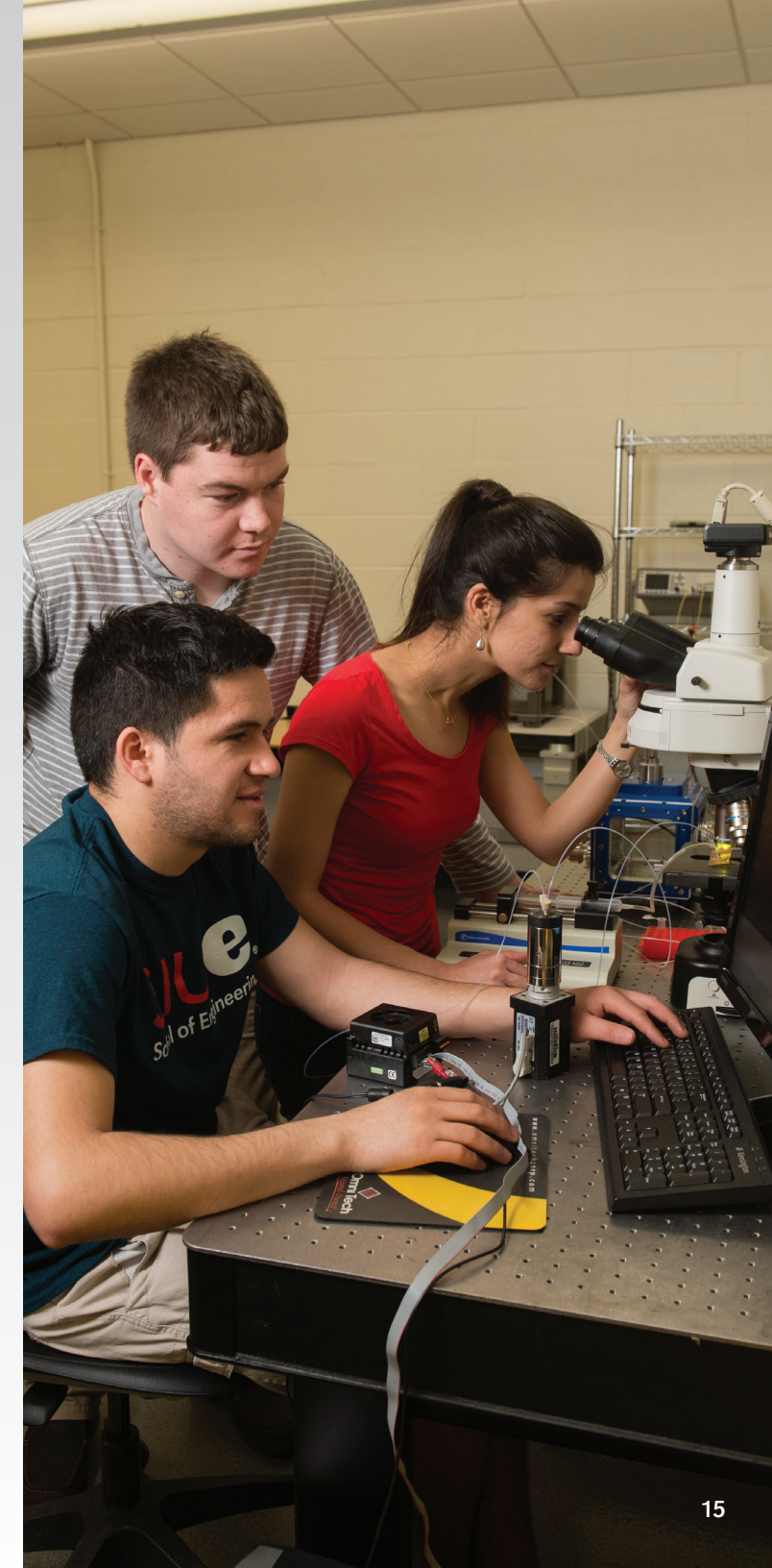
The reputation and consistency of

graduates is remarkable. Leadership at both the department and School level, and their involvement with industry associations, plays a big role.

How is the School addressing industry challenges?

More college graduates are interested in pursuing a field superintendent role. That role has traditionally been filled by individuals who worked their way up from the field trades such as carpentry. It challenges us to get them field experience that really is not a component of the curriculum. The School of Engineering attracts students who have a high work ethic, and often, that is coupled with family business, farm or other hands-on experience that helps them develop the necessary knowledge quickly.

See the complete list of board and council members at
siue.edu/engineering-advisory-board.





MOCK INDUCTED INTO ALUMNI HALL OF FAME

SIUE honored the School of Engineering's Robert Mock Jr., PhD, BS industrial engineering '90, at the Alumni Hall of Fame ceremony in October.

"This event recognizes impressive alumni who have made exceptional contributions through their leadership, character and hard work," said Cem Karacal, PhD, dean of the School of Engineering. "Dr. Mock represents the best of the School of Engineering."

An Urbana native, Mock's undergraduate experience included being awarded multiple academic scholarships through student associations and the engineering program, and winning Illinois' Alpha Phi Alpha Fraternity Inc. Brother of the Year Award.

"My time at SIUE and involvement with my fraternity shaped my belief that we can all be a catalyst of change even beyond our time on this earth," Mock said.

He subsequently earned a master's and doctorate, and achieved a wealth of experience in business, the military and higher education.

He began a career in higher education in 1995 at the University of Arkansas as a staff member in continuing education and later rose to the position of associate vice provost for student affairs. In 2010, he joined the University of Kentucky as the vice president for student affairs. Mock became president of Johnson & Wales University-Charlotte in October 2015.



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 2017 (July 1 2016-June 30, 2017). 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 scientist and construction managers.

Cem Karacal, Dean, School of Engineering

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