

CURRENT TRANSMISSIONS

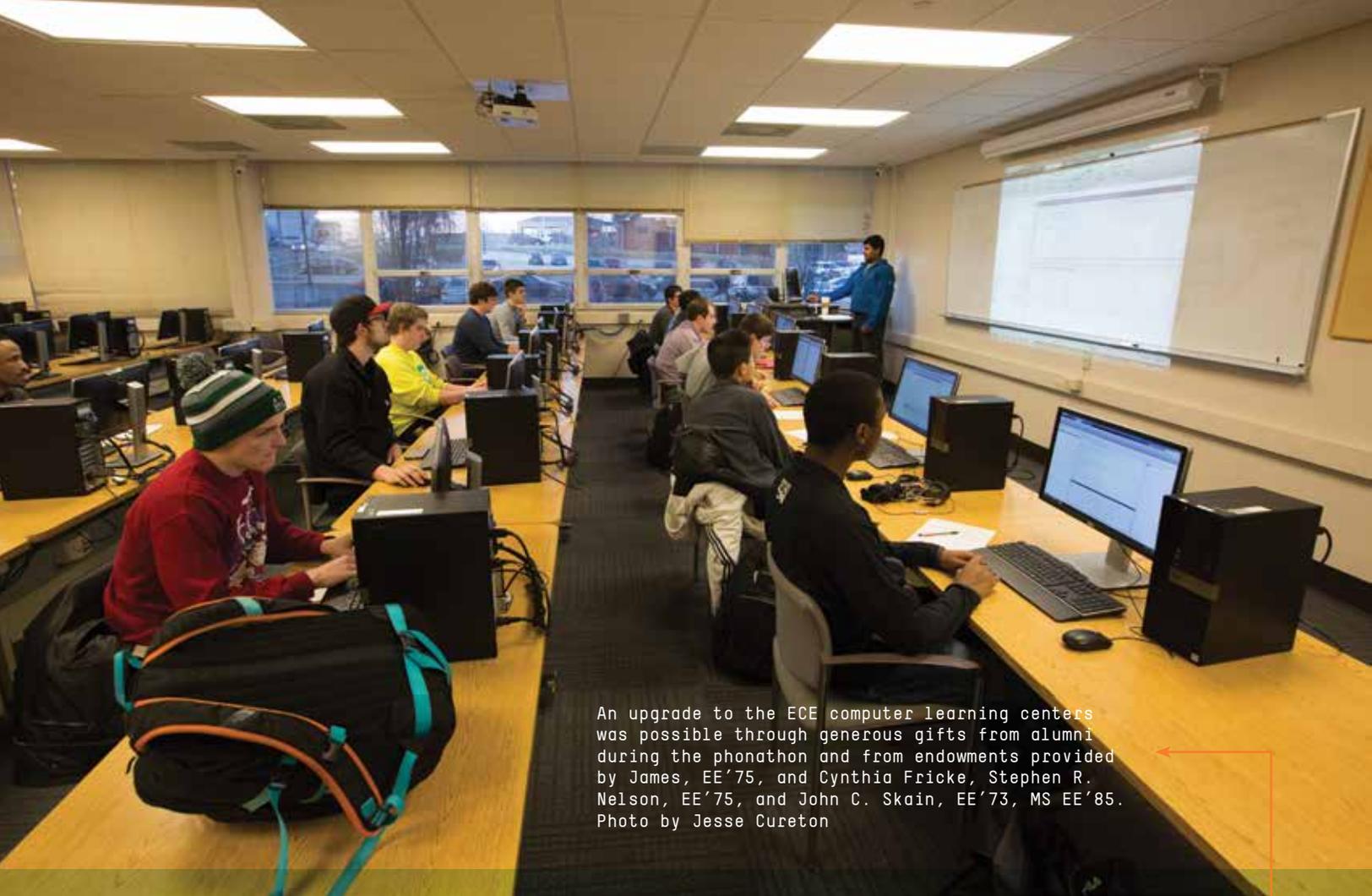
Electrical and Computer Engineering | Missouri S&T | Spring 2017

ECE FIRE RECOVERY CONTINUES

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TWO ECE GRADS NAMED ALUMNI OF INFLUENCE

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An upgrade to the ECE computer learning centers was possible through generous gifts from alumni during the phonathon and from endowments provided by James, EE'75, and Cynthia Fricke, Stephen R. Nelson, EE'75, and John C. Skain, EE'73, MS EE'85. Photo by Jesse Cureton

THANK YOU!

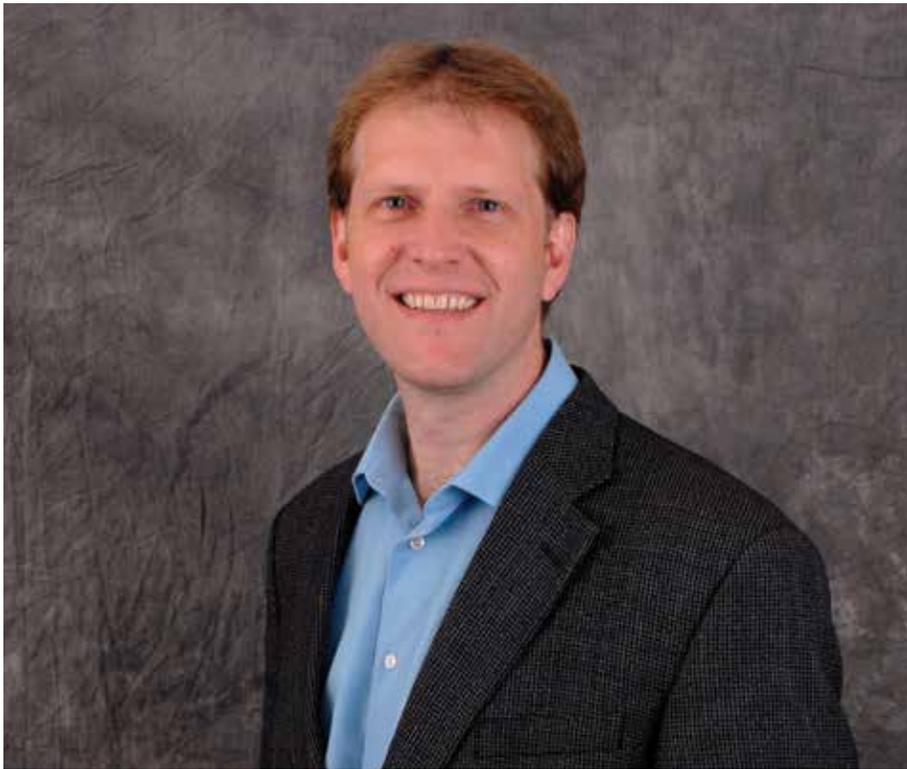
Missouri S&T has awesome alumni — for many reasons, not least of which is their generosity.

Alumni support makes our department better and improves the experience and opportunities for our students. Last year alumni donations to our department were used to provide more than \$100,000 in scholarships and fellowships, to purchase new laboratory equipment (outfitting three computing learning centers and the communications lab), to purchase parts for

senior design projects, to provide awards for student contests, to purchase kits for outreach activities to high school and elementary students, to send students to national meetings of IEEE or HKN, to send students to design competitions, and much, much more.

Your assistance is particularly appreciated now as we recover from the fire in Emerson Electric Company Hall. While the insurance

has been helpful, it won't come close to covering all of the costs. The shortfall is currently estimated to be over \$700,000. Covering those costs would be tough at any time, but especially with the recent announcement of more cuts to state support of higher education. Besides the cost of restoring the building, the fire gives us some unique opportunities to make improvements at much lower cost than normal, but finding funding will be challenging. Your help is always appreciated.



DEAR ALUMNI, COLLEAGUES AND FRIENDS

It's been quite a year. As you may already know, 2016 ended with a fire on the roof of Emerson Electric Company Hall which caused extensive smoke and water damage. While it would be easy to focus on the negative side of the fire, there is much to be thankful for. Most importantly, nobody was hurt. While the damage was extensive, it could have been much, much worse. The fire started on the roof and in the afternoon where it was quickly noticed and fire crews were able to rapidly contain the fire. I can only imagine how terrible the outcome might have been if the fire started on the ground floor while the entire building was full of faculty, staff and students, or started at night where it might have taken half the building before the fire department was called. As the chair, I'm relieved to say the fire was NOT started by a project or experiment gone wrong (it will be hard enough to live down the fact that it was an electrical fire). While the fire came right before final exams, through a herculean effort on the part of the registrar and the ECE staff, we were able to reorganize all finals so that every student completed the semester successfully. Through an even larger effort, the classrooms and instructional labs were put back in service before the spring semester, so all classes went forward as

planned. Everybody — UM System insurance, S&T campus support, the S&T departments, ECE faculty, staff, students and alumni — has been phenomenal. It is wonderful to work with such terrific people. While the fire will set us back, there are few departments that could handle and recover from it better than ours. And we will recover. In a few months the reconstruction will be finished and in many ways Emerson Electric Company Hall will be even better than before the fire. While I wish the fire had never happened, I am thankful for how things turned out.

Outside of the fire, there are many fantastic things going on in the department. Our students, faculty and alumni continue to show they are among the best in the world through their work and their awards. Our faculty and students continue to generate world-changing research. You can read about the great thing they do in the following pages.

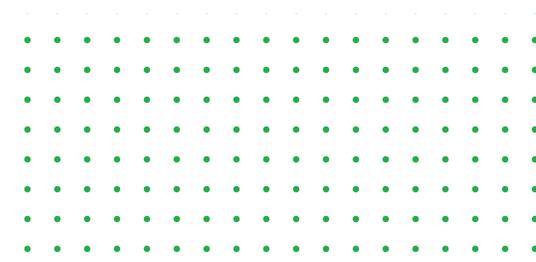
I always enjoy hearing from our alumni. Feel free to drop me a note or to stop by!

Warm Regards,

Daryl Beetner, Ph.D.
Chair, Electrical and Computer Engineering

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A member of the S&T faculty since 1991, Mariesa Crow received the major award from the Power and Energy Society.





ECE FIRE RECOVERY CONTINUES

On Thursday, Dec. 8, a cooling tower on the top of Emerson Electric Company Hall caught fire due to a short in an electrical box supplying power to the cooling motors.

Luckily, the fire was detected quickly, everyone was safely evacuated from the building within minutes of first smelling smoke, and the fire department was rapidly on the scene to douse the flames. The fire was out in a relatively short time and didn't spread to inside the building, but that didn't stop the fire from doing substantial damage. The fire burned through the roofing material

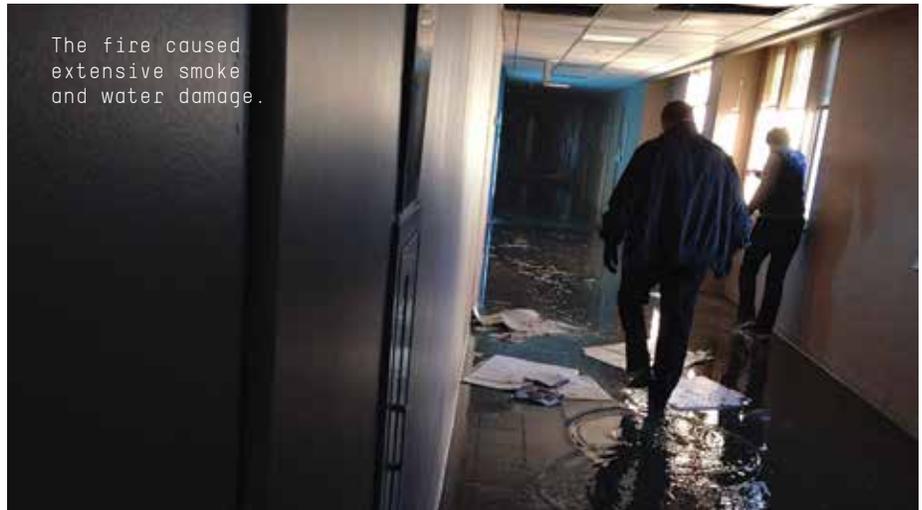
and allowed the water used to put out the fire to make its way inside the building. Faculty offices beneath the fire were completely soaked. Much of the second floor had up to an inch of standing water after the blaze. This water made its way to the first floor, raining down through any available openings. Worse, the fresh air intake for the building was located right next to the cooling tower,

so the thick, acrid smoke from the fire was pulled inside, filling the building. All classes were cancelled for Thursday afternoon and Friday after the fire. Through an enormous effort, the registrar was able to reschedule all of the final exams to be held the next week, so students were able to finish out the fall semester without worrying about making up an exam or project when they returned. Most importantly, nobody was hurt.

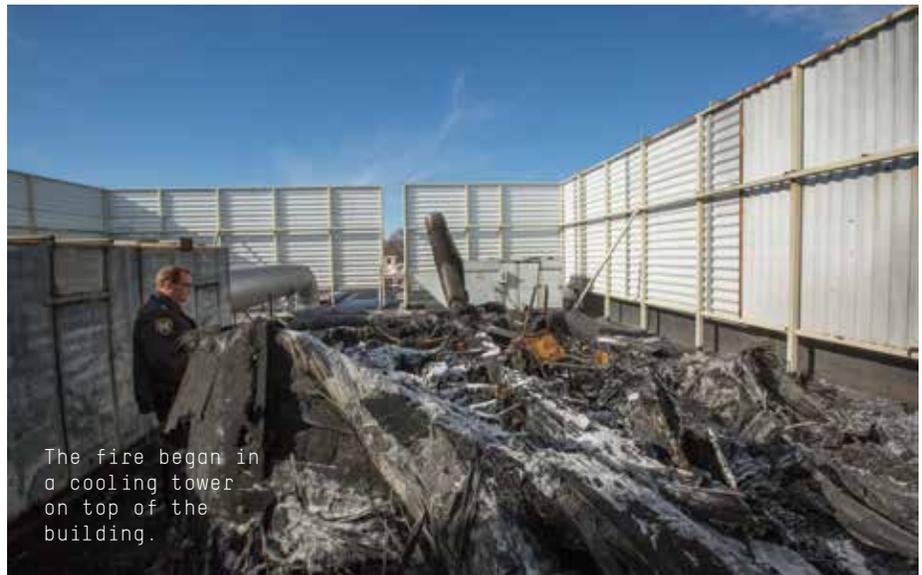
Before the fire was extinguished, the university was mustering the team that would oversee the cleaning and reconstruction of the building. Because of the smoke, every carpet and ceiling tile had to be replaced, much of the drywall and office furniture removed, and every surface cleaned before students could be allowed back in the building. The cleaning and recovery crews literally worked 24 hours a day (with the possible exception of Christmas and New Year's Day) to get the building back on line. Amazingly, they had nearly all of the classrooms and instructional labs (the entire west side of the building) ready by the beginning of the spring semester in mid-January. While the classrooms are ready, there is still much work to do before the building is finished. The damaged faculty offices likely will not be ready for service until March or April. It will be some time before we fully know the damage to furniture and instruments and how many paper records were lost. Thankfully, all electronic data was saved. The financial impact is still unknown, but will likely be in the millions. Insurance will cover much of the cost, but S&T and the department will still be stuck with a hefty bill.

The community has been absolutely wonderful in the aftermath of the fire. S&T Design and Construction, Maintenance, IT, the registrar and more worked tirelessly to minimize the impact of the fire on students, faculty and staff. Every department helped find temporary space to house faculty and students until they can return "home."

We've received many kind notes from alumni wishing for a speedy recovery, and many alumni have donated to help with the reconstruction. You are all awesome!



The fire caused extensive smoke and water damage.



The fire began in a cooling tower on top of the building.



Literally every surface had to be cleaned. Much of the drywall on the second floor had to be removed.

TWO NEW FACULTY

The ECE Department would like to introduce you to Hamidreza Modares and Chulsoon Hwang, two assistant professors who joined our faculty in August 2016.



HAMIDREZA MODARES
ASSISTANT
PROFESSOR

Hamidreza Modares received his Ph.D. degree in electrical engineering from the University of

Texas at Arlington in 2015. He was a senior lecturer with the Shahrood University of Technology in Iran from 2006 to 2009 and a faculty research associate with the University of Texas at Arlington from 2015 to 2016. His research areas include security of cyber-physical systems, distributed control of multi-agent systems, game theory, robotics, machine learning and smart grids. Distributed control of multi-agent systems has been applied to various safety critical engineering systems, such as power and energy systems. Such systems are vulnerable to faults and cyber-physical attacks and require the design of secure and reliable distributed controllers to sustain some notion of acceptable behavior under faults or attacks. His research results include over 40 refereed journal and conference publications and two book chapters. He has received best paper award from the 2015 IEEE International Symposium on Resilient Control Systems and a Stelmakh outstanding student research award from the department of electrical engineering at UTA in 2015.



CHULSOON HWANG
ASSISTANT
PROFESSOR

Chulsoon Hwang received his Ph.D. from the Department of Electrical Engineering at Korea Advanced

Institute Science and Technology in August 2012. He received his bachelor's and master's degrees from the same department in 2007 and 2009, respectively. Before coming to S&T he worked as a senior engineer from 2012 to 2015 in Samsung Electronics, where he was engaged in the electromagnetic design of smart phones. He then worked in the Missouri S&T Electromagnetic Compatibility Laboratory from 2015 to 2016 before joining the faculty. Hwang has authored or co-authored over 40 journal and conference papers. His research interests focus on the development of reliable and fast high-speed digital systems including signal integrity, power integrity, and electromagnetic interference. His recent research focuses on the development of an efficient power distribution network for three-dimensional ICs (3D-ICs) where multiple silicon dies are stacked together and connected together using through-silicon vias — a promising technology for next-generation integrated circuits.

PITCH PERFECT



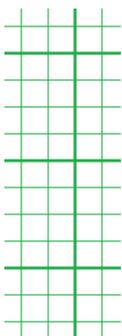
Imagine being asked to condense years of complicated research into a three-minute pitch with a single slide as a visual aid. That's the premise of Three Minute Thesis.

Missouri S&T hosted its first 3MT competition Nov. 16-17, 2015 and a subsequent session in November 2016. Over 40 graduate students participated in the inaugural two-day, three-round competition. Participants were expected to summarize their research in less than three minutes — they were disqualified if they went long. A panel of judges scored their presentations. The judges included S&T faculty, staff and administrators, as well as prominent members of the Rolla community.

Maigha, a Ph.D. student in electrical engineering from northern India, won the initial competition with a presentation about ways to reduce the demand of electric vehicles on power systems, which she says is especially important considering the increasing popularity of such vehicles.

"My first focus was to understand how (electric cars) would impact the power system," she says. "Now we are trying to find controlling strategies for vehicle charging so that we can reduce those impacts on the power system. I am working on algorithms that can accomplish this reduction."

Maigha moved on to a regional 3MT competition at the annual meeting of the Midwest Association of Graduate Schools (MAGS) in Chicago.



Know a fellow alum who is doing extraordinary things for S&T and the world? Tell us about them.

We want to recognize and promote successful, innovative, exciting alumni. Email ece_alum@mst.edu.



Photo by Bob Phelan

BUILT FOR SPEED

Coming into this season as the ninth-ranked team in the world (out of 531), S&T's Formula SAE racing team is looking to continue its impressive performance.

In May 2016, the squad finished seventh at a Michigan International Speedway event. Then came a first-place win in June at the Formula North competition in Toronto — a victory team leader Jarrett Harkless calls the first by a U.S. school at that event. That was soon followed by a fourth-place finish at a Lincoln, Neb., race that Harkless compares to the sport's national championship.

During the Michigan competition, a skid-pad event tested the car's turning and

cornering on a figure-eight-shaped course. An acceleration test measured the car's speed over a short distance. A one-lap autocross event proved the car's maneuverability on a tight course and determined the starting order for the final event, an endurance race to prove durability. And in the endurance race, the car had to withstand the stress of long-term driving at elevated speeds. Each race was timed to rank the teams; none of the events were head-to-head races.

Missouri S&T's 2016 car features a modified Kawasaki engine that can propel the vehicle to speeds of up to approximately 65 mph. The car underwent several hours of wind tunnel testing to help the team design a custom aerodynamics package. Its custom fittings produce a large amount of downward force and are designed to help the car's tires grip the track better.

Building and racing a competitive Formula SAE race car requires the skills of engineers across disciplines. Many electrical and computer engineering students participate on the team as part of its electrical group, as well as in other areas.



Photo provided by
S&T Solar Car Team

S&T 2016 SOLAR CAR TEAM EARNS FOURTH IN 1,975-MILE RACE

Missouri S&T's Solar Car Design Team earned fourth place at the American Solar Challenge. The worldwide collegiate race challenged teams to design and build solar-powered vehicles and race them for nearly 2,000 miles – in this case, from Ohio to South Dakota.

The American Solar Challenge, held July 30-Aug. 6, was designed in partnership with the National Park Service to support the federal park systems 2016 centennial celebrations. The race route included stages and checkpoints at nine national parks and historic sites throughout the Midwest. Teams were scored by the lowest cumulative time for each day's stage.

Missouri S&T received two of the three design awards presented during the competition — “Best Solar Array” and “Best Electrical Design.”

Before the cross-country challenge, teams first had to pass scrutineering during the Formula Sun Grand Prix. The track race acted as a safety proving ground and seeding system for the cross-country race. Teams started the event with technical and safety inspections, then moved on to three days of racing at the Pittsburgh International Race Complex in Wampum, Pennsylvania.

Twenty-three teams competed at the grand prix, but only 12 teams qualified for the road race by meeting all safety and lap requirements, and technical feasibility.

Missouri S&T's Solar Car Design Team named its vehicle the Solar Miner after the school's mascot, Joe Miner. The car is an all-carbon-fiber composite vehicle with solar panels on the top. The entire car, including its electrical components, was designed and constructed

by S&T undergraduates. Its steering wheel is designed similar to a Formula-One-style race car, with many integrated buttons and controls.

“Despite cloudy weather and rain, our students overcame rookie mistakes and ran with, even outperformed, teams with far more experience,” says Bob Phelan, outreach manager for the Student Design and Experiential Learning Center. “Missouri S&T has come out of absolutely nowhere to run with the big dogs, while spending far less money to do so. Racing doesn't get better than this.” For more information about the competition and a full list of results, visit americansolarchallenge.org/the-competition/ascfsgp-2016.

ECE members of the team included:

- **Will Applegate**, a junior in electrical engineering from Pacific, Missouri
- **Jesse Cureton**, a senior in computer engineering from Bonne Terre, Missouri
- **Will Lorey**, a junior in computer engineering from St. Louis
- **Alex Moll**, a senior in electrical and computer engineering from Hermann, Missouri
- **Caleb Olson**, a senior in computer engineering from Vienna, Missouri
- **Tristan Ponder**, a junior in electrical engineering from St. Mary, Missouri

STUDENT AWARDS

The ECE Gamma Theta Chapter of Eta Kappa Nu (IEEE-HKN) was selected again as one of HKN's outstanding chapters, among 22 HKN chapters around the world. This is the 15th consecutive time that Missouri S&T has received this award. Other student honors include:

Li Guan and Matthew Wedewer — First place, IEEE Region 5 Student Electronic Circuit Design Competition

Leann Krieger — IEEE Region 5 Outstanding Student Member

Trevor McCasland — IEEE Saint Louis Section Outstanding Young Engineer

Katelyn Brinker — IEEE Saint Louis Section Outstanding Student Member

Emily Hernandez — IEEE/HKN 2015-2016 Alton B. Zerby and Carl T. Koerner Outstanding ECE Student Award

Isam Alobadi and Dr. Sahra Sedigh — Best paper award at the International Symposium on Resilient Cyber Systems

Ying Cao (former student) — IEEE EMC Society President's Memorial Award

Ying Cao, Tamar Makharashvili, Lijun Jiang, Dr. Jun Fan, Dr. Jim Drewniak — Best student paper at the 2016 IEEE Electromagnetic Compatibility Symposium

Zhiping Yang (former student) — IEEE EMC Society Technical Achievement Award

Guangyao Shen, Qian Liu, Xiangyang Jiao, Ruijie He, Dr. Victor Khilkevich — Best Student Paper honorable mention at the 2016 IEEE Electromagnetic Compatibility Symposium

Ali Foudazi, Atieh Talebzadeh, Omid Hoseini — Best student design, 2016 IEEE Electromagnetic Compatibility Symposium

Shubhankar Marathe, Abhishek Patnaik, Tamar Makharashvili — Best student design honorable mention, 2016 IEEE Electromagnetic Compatibility Symposium

Yuan Gao — 2016 IEEE Instrumentation and Measurement Society Graduate Fellowship

ELECTRICAL ENGINEERING STUDENTS EARN GRAINGER AWARD

Eleven electrical engineering graduates received a \$6,000 Grainger Power Engineering Award from the electrical engineering department at a ceremony on Saturday, May 14. The awards are presented as a reward for academic excellence.

The awards are funded by a \$1.3 million endowment from The Grainger Foundation of suburban Chicago. Missouri S&T is recognized by Grainger for its ability to attract top students and educate quality engineers and is one of only six universities in the nation chosen to receive such funding.

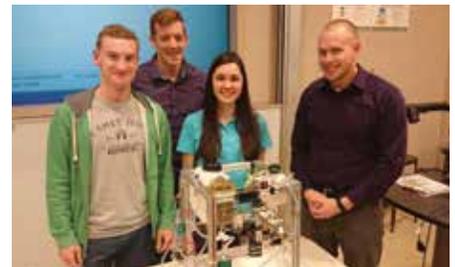
Our 2016 recipients of the power engineering awards were:

- **Chance Alexander**, EE'15, of Harrisonville, Missouri
- **Max Bevell** of Kirksville, Missouri, a senior in electrical engineering
- **Adam Blessing** of St. Louis, a senior in electrical engineering
- **Ron Deffenbaugh** of Kansas City, Missouri, a senior in electrical engineering
- **Bailey Gates** of Pleasant Hill, Missouri, a senior in electrical engineering
- **Tyler Jackson**, EE'15, of Labadie, Missouri
- **Leann Krieger** of St. Louis, a senior in electrical engineering
- **Curtis Okafor** of Shawnee Mission, Kansas, a senior in electrical engineering
- **Colton Pierce** of Gerald, Missouri, a senior in electrical engineering and computer engineering
- **Hannah Schottel** of St. Joseph, Missouri, a senior in electrical engineering
- **Kyle Teevan**, EE'15, of Kansas City, Missouri

TOP SENIOR DESIGN PROJECTS

Every ECE student must complete a capstone senior design project before they can receive their bachelor's degree. To recognize the best of these projects, the department has been holding a contest each semester. Recent winners were:

- Team QuickPress, which developed an automated quick-press coffee brewer. Members include **Emily Hernandez, Rob Biros, Stoney Tyler** and **Jacob Haase**.
- Team Reflow, which developed a low-cost open-source kit for converting a toaster oven into a reflow soldering oven. Members include **Michael Fanger, Joel Bierbaum, Jonathan Eftink** and **Tyler Ryan**.
- Team CarSeat, which designed an instrumented child seat to protect children from being left in a hot car. Members include **Adina Hoyle, Charles Phillips** and **Nathan Viehmann**.
- Team SpotU, which designed a web-enabled gadget to automatically find open study areas around campus. Members include **Kyle Wegener, Hanna Schottel, Jonathan Daniels** and **Robert Miller**.



Team QuickPress



Team Reflow

DR. STEVEN L. GRANT DIES

Missouri S&T lost a great professor in 2016. **Steven L. Grant**, EE'79, the Roy A. Wilkens Missouri Telecommunications Professor in electrical and computer engineering, died Sunday, April 24, 2016.

Grant, who joined the S&T faculty in 2004, held a master of science degree from the California Institute of Technology and a Ph.D. from Rutgers University, both in electrical engineering.

Grant began his career working for Bell Labs in Whippany, N.J., in 1980. He then worked on speech coding at ITT-Defense Communications Division for two years before returning to Bell Labs to work on speech coding, echo cancellation and other digital signal processing research and applications. In 1991, Grant joined the Bell Labs acoustic and speech research department and a decade later he became the technical manager of the acoustics research group. He also worked at Massachusetts Institute of Technology's Lincoln Lab, where he examined nonlinear equalization and sonar research.

"I have been very lucky to do research at Bell Labs and the MIT Lincoln Lab," Grant said previously. "But I have always wanted to come back home."

Grant played a seminal role in advancing acoustic echo cancellation. He wrote four books and nearly 100 papers, and holds 14 patents that have been cited nearly 3,000 times in the scientific literature.

Special thanks are due to the late **Fred Finley**, EE'41, and his family, whose endowed ECE fellowship will ensure Dr. Grant's Ph.D. students are able to finish their degrees despite his death.



Steven L. Grant

STANLEY SWEEPS TEACHING AWARDS

For years, S&T students have lauded the great teaching done by **R. Joe Stanley**.

Stanley is no stranger to teaching awards. His phenomenal student-teacher ratings have won him Missouri S&T's Outstanding Teaching Award in seven out of the last eight years (when he won a Teaching Commendation) as well as two S&T Teaching Excellence Awards. In the last 1.5 years his recognition went international. It started in 2015 when he won the IEEE Saint Louis Section award for the Outstanding Educator. This was followed in 2016 with the IEEE Region 5 Outstanding Educator Award, which covers most of the southern Midwest.

Most recently he won two of the world's top awards for teaching, the IEEE-USA Professional Achievement Award and the IEEE-Eta Kappa Nu 2016 C. Holmes MacDonald Outstanding Teaching Award. These awards recognize not only his performance in the classroom, but his dedication to outreach and service activities. Stanley is heavily involved in Project Lead the Way, a program designed to train high school students in science, technology, engineering, and math disciplines. He has trained nearly 200 high school teachers on principles of computer engineering, who have then taught those principles to numerous additional high school students in Missouri and across the U.S.



7 S&T OUTSTANDING
TEACHING AWARDS

2 S&T TEACHING
EXCELLENCE AWARDS

4 IEEE AWARDS

Outstanding Educator - Saint Louis
Section, 2015

Outstanding Educator - Region 5, 2016

IEEE-USA Professional Achievement
Award, 2016

IEEE-Eta Kappa Nu C. Holmes MacDonald
Outstanding Teaching Award, 2016



ECE STUDENT WINS INTERNATIONAL HONOR

Emily Hernandez, EE'16, was selected to be the IEEE-Eta Kappa Nu (IEEE-HKN) Alton B. Zerby and Carl T. Koerner Outstanding Student Award winner for 2016. This award is given to one student each year across the globe. In the award's 52-year history, S&T students have won five times, earned honorable mention seven times and been a finalist six times. An S&T student has been recognized as a finalist in 12 of the last 15 years.

Hernandez graduated summa cum laude (4.0 GPA) with a bachelor of science degree in electrical engineering and minors in mathematics and cognitive neuroscience. She held several leadership positions, including: bridge correspondent for Eta Kappa Nu; electrical division lead and president of the Missouri S&T Robotics Design Team; and secretary of the Missouri S&T chapter of the Society of Hispanic Professional Engineers. She was also an honors academy fellow, part of the Chancellor's Leadership Academy and a member of the Society of Women Engineers and IEEE.

Hernandez's extensive volunteer activities included service events designed to attract minorities and women to careers in science, technology, engineering and math. She served as a Student Diversity Program Mentor, mentored a team for the "Girls Who Code" competition, and tutored students as a peer learning assistant in the Learning Enhancement Across Disciplines program.

She is also a published author. Her work, "Graphical Trust Models for Agent-Based Systems" is pending publication in *IEEE Potentials Magazine*, and "High Speed Serial Link Challenges using Multi-level Signaling," on which she is co-author, was accepted for the Electrical Performance of Electronic Packaging and Systems (EPEPS) Conference, October 2015.

Hernandez worked as a design engineer intern at Garmin International for two years, and has held positions as a signal integrity undergraduate intern at Intel Corporation and design intern at Molex High Performance Cable. She has held undergraduate research positions in the Electromagnetic Compatibility Laboratory, and as an Undergraduate Research Experience Fellow in the Applied Computational Intelligence Laboratory at Missouri S&T. She is currently pursuing her Ph.D. in electrical engineering at Stanford University.

ECE STUDENTS SELECTED FOR UM SYSTEM ENTREPRENEURSHIP PROGRAM

John Kovacs, a senior from St. Louis, and **Tanner Schaack**, a senior from Neosho, Missouri, were selected for the 2016 cohort of the University of Missouri System Entrepreneurial Scholars and Interns Program. The program provides students with an academic foundation in entrepreneurial principles and practices as well as the opportunity to learn from a mentor or work within a startup company.

The 2016 cohort took approved entrepreneurial-related courses during the spring semester followed by a 10-week, paid summer internship.

"The goal of the program is to create a steady stream of entrepreneurs around the state capable of taking their cutting-edge ideas to the market as new business ventures," says **Bob Schwartz**, UM System interim vice president for academic affairs, research and economic development. "Creating this new wave of well-educated entrepreneurs in Missouri benefits the local, regional and national economies."



John Kovacs



Tanner Schaack

ECE GRAD GIVES COMMENCEMENT ADDRESS



Tom Voss, EE'69, spoke about the importance of safety, diversity and thinking every day at the Fall 2016 Commencement.

Voss is the former chief executive of Ameren Corp., a Fortune 500 company. At Ameren, Voss helped build a diverse and inclusive environment, earning the company a spot on DiversityInc's Top 5 Regional Utilities in 2012.

He is now chair of SmartWires, a global grid optimization company based in the San Francisco Bay area. He previously served as chair of the St. Louis Regional Chamber and led the chamber during its nine-month national search for a president and CEO.

At Missouri S&T, Voss has served on the Academy of Electrical and Computer Engineering, and he and his wife, Carol, are members of the Order of the Golden Shillelagh.

Gov. Jay Nixon appointed Voss and two new curators in 2016. Upon accepting Nixon's nomination to the Board of Curators, he resigned from his position on the S&T Board of Trustees.

Voss resigned from the Board of Curators in late January after assisting with what he called his primary goal of hiring **Mun Choi**, the new University of Missouri System president designate.

THREE INDUCTED INTO S&T ACADEMY OF ELECTRICAL AND COMPUTER ENGINEERING

Three electrical and computer engineers with ties to Missouri S&T were inducted into the Missouri S&T Academy of Electrical and Computer Engineers during the academy's induction ceremony at the Comfort Suites Conference Center in Rolla on April 21, 2016.

The academy is an advisory group to the Missouri S&T electrical and computer engineering department. Founded in 1980, the academy is composed of alumni and other electrical and computer engineers who have made outstanding contributions to their profession.

Our new members:



Sean J. Bentley

Sean J. Bentley of Farmingville, New York, associate professor of physics at Adelphi University in New York, earned bachelor of science and master of science degrees in electrical engineering from Missouri S&T in 1995 and 1997, respectively. He also holds a Ph.D. in optics from the University of Rochester. Bentley began his career as an assistant professor of physics at Adelphi in 2003. He was named director of the Society of Physics Students and Sigma Pi Sigma for the American Institute of Physics in 2014. He holds one patent and has authored numerous book chapters, journal articles, archival papers and conference presentations, and is working on a book. He is a member of several honor societies and professional organizations.



Alan G. Erickson

Alan G. Erickson of Raymore, Missouri, earned a bachelor of science degree in electrical engineering from Missouri S&T in 1975. Erickson retired in 2008 as manager of the instrumentation and controls department for Kiewit Power Engineers. He began his career as an instrumentation and controls engineer for Burns & McDonnell Engineering in 1975. Throughout his career he held positions of increasing responsibility at SOR Inc., Bibb and Associates and Kiewit. Erickson is an ordained minister and chief financial officer at Grandview Community of Christ Church. He serves on the Miner Alumni Association board of directors and is a member of the board of Wedgwood International Seminar. He is webmaster for three nonprofit websites, a senior life member in the International Society of Automation and a licensed professional engineer in Missouri.



Vincent J. Kunderman

Vincent J. Kunderman of Eureka, Missouri, a consulting engineer, earned a bachelor of science degree in electrical engineering from Missouri S&T in 1975. Kunderman began his career as an engineer with Union Electric and held engineer positions at Booker Associates and Electric Power Systems before being named chief electrical engineer at JonesMayer Inc. in 1987, and at Heideman and Associates in 1990. He has been a consulting engineer since 1992. Kunderman is a senior member of the Institute of Electrical and Electronics Engineers and a member of the National Society of Professional Engineers and the Missouri Society of Professional Engineers. He serves on the Electrical Board of Missouri and Illinois, is active in the Miner Alumni Association and is a licensed professional engineer in Missouri.

WATKINS ELECTED TO LEADERSHIP POSITION IN IEEE-HKN

Steve E. Watkins, EE'83, MS EE'85, professor of electrical and computer engineering, is the 2017 president-elect of IEEE-Eta Kappa Nu (IEEE-HKN), the honor society of the Institute of Electrical and Electronics Engineers. In 2018, he will lead the organization as IEEE-HKN president and will chair its board of governors.

Watkins currently serves as the editor-in-chief for THE BRIDGE magazine of IEEE-HKN and is a prior member of the board of governors. He is also a co-advisor for the Missouri S&T student chapter of IEEE-HKN.

HKN was founded in 1904 and merged with IEEE in 2010. The organization promotes the profession through recognition and service activities. More than 200,000 people have been inducted into the 235 chapters worldwide. Membership is conferred for excellence in scholarship, leadership, character and service.

"IEEE-HKN's mission is to promote the engineering profession, to recognize and encourage excellence and to provide service," Watkins says. "Among the many responsibilities and opportunities of these leadership positions, I look forward to addressing the member experience, especially for our student members, and to facilitate communication among the chapters, the student members, alumni



and the board. Overall, my goal is to contribute to the HKN community and to be a spokesman for the organization."

"The Gamma Theta Chapter at Missouri S&T is among the most active chapters in HKN," Watkins adds. "It has been recognized for 11 consecutive years in the annual outstanding chapter activities program, and it has had many successful award nominees.

"The Gama Theta Chapter gave me my start in HKN. I was inducted as a student in 1981, and I received the Outstanding Student Award in 1983."

Watkins joined the S&T faculty in 1989 after earning a Ph.D. in electrical engineering from the University of Texas at Austin.

SEVEN ECE FACULTY HONORED FOR OUTSTANDING TEACHING

Seven ECE faculty members received the Outstanding Teaching Award for 2015-16. The winners were recognized at a December ceremony. The award is given each year to faculty members by the Outstanding Teaching Award Committee, which bases its selections on student evaluations. Congratulations to the following individuals selected for awards:

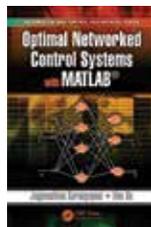
- **Mariesa Crow**, vice provost for research and sponsored programs and the F. Finley Distinguished Professor of electrical engineering
- **Kelvin Erickson**, professor of electrical and computer engineering
- **Jonathan Kimball**, associate professor of electrical and computer engineering
- **Jagannathan Sarangapani**, professor of electrical and computer engineering
- **R. Joe Stanley**, associate professor of electrical and computer engineering
- **Theresa Swift**, associate teaching professor of electrical and computer engineering
- **Reza Zoughi**, the Schlumberger Distinguished Professor of Electrical Engineering

IN PRINT



Ian Ferguson, professor of electrical and computer engineering, edited *Rare Earth and Transition Metal Doping of Semiconductor Materials: Synthesis, Magnetic Properties and Room Temperature Spintronics*

with John Zavada and Volkmar Dierolf. The book explores traditional semiconductor devices that are based on control of the electron's electric charge.



Jagannathan Sarangapani, the William A. Rutledge - Emerson Electric Co. Distinguished Professor in Electrical Engineering, published *Optimal Networked Control Systems with MATLAB*, with Hao Xu. The book

discusses optimal controller design in discrete time for networked control systems.



Front row from left: Dick Vitek, MS Chem'58; Bob Brackbill, MinE'42; and Bipin Doshi, ChE'62, MS ChE'63. Back row from left: Roger Dorf, ME'65; Joe Ballard, MS EMgt'72; Roy Wilkens, EE'66; Matt Coco, CE'66; and Bob Brinkmann, CE'71. Not pictured: Sandra Magnus, Phys'86, MS EE'90; and Don Gunther, CE'60, who were unable to attend the gala.

ECE FACULTY AWARDS

ECE has outstanding faculty who are internationally recognized for research, teaching, and service. Some awards won recently that are not already mentioned elsewhere in this newsletter include:

David Pommerenke — IEEE-EMCS Richard J. Stoddart award, the highest award for technical achievement given by the IEEE Electromagnetic Compatibility Society.

Sahra Sedighsarvestani — Global Learning 2015 Outstanding Teaching Excellence Award.

Jun Fan — Best Signal Integrity/Power Integrity paper at the 2016 IEEE EMC Symposium.

Jun Fan and former S&T Student **Ying Cao** — Best Poster Award at the 2016 IEEE Electrical Performance of Electronic Packaging and Systems conference.

Amardeep Kaur — IEEE Saint Louis Section Outstanding Branch Counselor. Kaur was also elected chair-elect of the Midwest Section of ASEE. She will serve as chair-elect for 2016-17 and as chair for 2017-18.

Donald Wunsch — awarded a patent for "Methods and systems for bi-clustering algorithm."

Mohammad Tayeb Ahmad Ghasr and **Reza Zoughi** — awarded patents for "Free-Hand Scanning and Imaging" and "Three Dimensional Holographical Imaging."

Chengshan Xiao — 2015 (IEEE) Wireless Communications Technical Committee Recognition Award.

Minsu Choi — Best Paper award at the International SoC Design Conference.

TWO ECE GRADS NAMED ALUMNI OF INFLUENCE

Two ECE graduates were honored with eight other graduates of Missouri S&T at the 2016 Alumni of Influence event in November at Hasselmann Alumni House. This is the second time Missouri S&T has honored a group of graduates as influential alumni. The inaugural celebration was held in 2011.

For the 2016 celebration, a committee made up of previous honorees reviewed nominations and made recommendations to select the new class. The 2016 ECE Alumni of Influence are:

Sandra Magnus, Phys'86, MS EE'90, of Reston, Virginia, executive director of the American Institute of Aeronautics and Astronautics and a former NASA astronaut. Magnus is a veteran of three space missions, including a four-month stint on the International Space Station and the final NASA space shuttle missions.

Roy Wilkens, EE'66, of Tulsa, retired CEO of WilTel and McLeodUSA and chair and co-founder of Adaption Technologies. At WilTel, Wilkins repurposed thousands of miles of decommissioned oil and gas pipelines into a national fiber optic network.

Wilkens created the Roy A. Wilkens Missouri Telecommunications Professorship through a generous donation to the university in April 1999. This professorship was previously held by **Steve Grant** (see page 8).

STUDENTS AND FACULTY RECOGNIZED BY IEEE REGION 5

Electrical and computer engineering students **Li Guan** and **Matthew Wedewer** were the first-place winners in the recent Region 5 Student Electronic Circuit Design Competition, in which the students had to design and build a circuit in a limited time. This means that Missouri S&T earned first place two years in a row.

R. Joe Stanley, associate professor in electrical and computer engineering, received the Outstanding Educator Award, and **Leann Krieger**, electrical engineering senior, received the Outstanding Student Member Award. The student and recognition events were held in April 2016. Region 5 includes Arkansas, Colorado, Kansas, Louisiana, Missouri, Oklahoma, Texas and parts of the surrounding states.

CROW RECEIVES MAJOR IEEE AWARD



Mariesa Crow, vice provost for research at Missouri S&T and the Fred W. Finley Distinguished Professor of Electrical and Computer Engineering, recently received the 2016 IEEE Power and Energy Society Outstanding Engineering Educator Award for “leadership and innovation in electric power engineering education.”

The IEEE PES is one of the larger societies of IEEE, which is the world’s largest technical professional organization.

“We’re very pleased to see Dr. Crow receive this well-deserved recognition,” says **Daryl Beetner**, chair of electrical and computer engineering. “She is an outstanding educator and researcher, and she has done much to advance power engineering education here at Missouri S&T and across the nation.”

A member of the Missouri S&T faculty since 1991, Crow was named the Finley Distinguished Professor in 2006.

Prior to becoming vice provost for research at S&T in March 2016, Crow led the Mid-America Regional Microgrid Education and Training Consortium, which is part of a U.S. Department of Energy effort to support power systems research and develop coursework for the renewable energy workforce.

Missouri S&T received a \$4.3 million grant in

2013 to develop the consortium over five years as part of the DOE’s SunShot Initiative.

Crow also led Missouri S&T’s contributions to a nationwide effort to develop an “Internet for energy” to transform the way energy is delivered nationwide. The project is known as the FREEDM (Future Renewable Electric Energy Delivery and Management) Systems Center, based at North Carolina State University. Missouri S&T is one of seven universities in the consortium, which is an NSF Engineering Research Center.

In 2014, Crow received the University of Missouri System’s President’s Award for Leadership in recognition of her leadership and service to Missouri S&T.

Crow was the founding director of Missouri S&T’s Energy Research and Development Center. She also served as dean of the campus’s former School of Materials, Energy and Earth Resources from 2003 to 2007 and as founding director of S&T’s Energy Research and Development Center from 2007 through 2012. She also served as associate dean for research and graduate affairs in the former School of Engineering from 2001 through 2003.

Crow holds a master’s degree and Ph.D. in electrical engineering from the University of Illinois at Urbana-Champaign and a bachelor’s degree in electrical engineering from the University of Michigan.

JONATHAN KIMBALL RECOGNIZED AS DEAN’S SCHOLAR



Jonathan Kimball, associate professor of electrical and computer engineering, was named an inaugural Dean’s Scholars of the College of Engineering and Computing. The position recognizes excellence in both scholarship and teaching. Six faculty were appointed Dean’s Scholars in 2016. The position includes a \$10,000 research stipend.

MARTIN RECEIVES STAFF AWARD



Sandy Martin, office support assistant III in electrical and computer engineering, received the Missouri S&T Staff Excellence Award.

The award recognizes staff for significant contributions to the university through a combination of job performance, relationship with their associates and dedication to S&T. Martin joined the department in 2000, serving as the secretary to computer engineering, then as the undergraduate/graduate secretary, and now as secretary to the chair.



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Tell us how you're doing. We'd love to hear about new appointments, degrees earned, job promotions and other family or professional news.

Get in touch with your department by emailing ece_alum@mst.edu. Tell us what you're doing with a degree in electrical or computer engineering so we can feature your accomplishments among our alumni achievements stories.

