

EMSE

Missouri S&T | Spring 2016



50 YEARS
IN THE
MAKING

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50 YEARS IN THE MAKING

In 1966, campus leaders took a bold step and built a brand new engineering discipline — one that brought together engineering, technology and business — and the engineering management program was born. Recognized as the first university to offer such a program, Missouri S&T is still one of the top producers of graduates in the field.

1966

Engineering Management program is established at Missouri S&T

1968

First bachelor's degree in Engineering Management is awarded at Missouri S&T

1974

Missouri S&T starts partnership with Fort Leonard Wood

1979

American Society for Engineering Management is founded. Missouri S&T's undergraduate program receives ABET accreditation

1984

First Ph.D. in Engineering Management is issued at Missouri S&T

1986

Engineering Management Building is constructed at Missouri S&T

1999

Systems Engineering program is developed at Missouri S&T

2004

Department is renamed Engineering Management and Systems Engineering

2005

First master's degree in Systems Engineering is awarded at Missouri S&T



Message from the chair

It is a time of tremendous achievement and anticipation for EMSE! I am having an amazing journey as interim chair of the department and am so impressed by all that our faculty, staff, students, and alumni do to advance the profession, contribute new knowledge, and give back to our community on campus and beyond. I can point to many as living legacies of Professor Bernie Sarchet, the founder of engineering management as a department and as a field of engineering!

As we begin the countdown to our celebration of 50 years in 2016, I invite you to see where

we've been and just how far we've come. We embody the campus motto that MINERS DIG DEEPER in all that we say and do. We are human powered, we are family!! I feel certain that you'll enjoy reading about the accomplishments of our students, the scholarship of our faculty, the dedication of our staff, and the passion of our alumni! I have every confidence that the features in the newsletter will send you rushing to your calendars to put 2016 Homecoming in your date books. Come home to EMSE to help us celebrate our 50th anniversary in grand style. It won't be a party without YOU!

Warm Regards,

Dr. Suzie Long

Hist'84, Phys'84, MS EMgt'04, PhD EMgt'07

Interim Chair, Engineering Management and Systems Engineering



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HUMAN POWERED

Lucas Parker, a sophomore in engineering management, aerospace engineering and mechanical engineering, is obsessed with fitness.

From lifeguarding to coaching a gym class at The Centre, Rolla's Health and Recreation Complex, Parker spends a lot of time taking care of his body and encouraging others to do the same. And he's been this way his whole life.

In high school, Parker rode his bike to school every day. So, when he came to S&T and wanted to join a design team, he found the

perfect fit in the Human Powered Vehicle Competition Team.

Each year, the team designs, builds and races an aerodynamically fitted recumbent bicycle or tricycle. This year the team earned first place at the American Society of Mechanical Engineers 2015 Human Powered Vehicle Challenge East Coast Competition in Gainesville, Florida.

"Even though we are serious about performance and begin preparation for the next competition as soon as the last one is done, the atmosphere isn't stressful," he says. "It's a relaxed learning experience. It's just a bunch of friends building a bike and learning at the same time."

Parker says the team is more than a learning experience — it's a life experience.

"As a freshman, I didn't know anyone, so I would go to the shop every weekend to work on the bike and that's how I met new friends," he says. "The team has opened up doors for friendships, networking and travel that I wouldn't have gotten otherwise."

Though he loves being part of the team, Parker says that he enjoys teaching others teamwork just as much. When he coached soccer at Gene Slay's Boys Club in the Souldard neighborhood

in St. Louis, he learned just how much he loved it.

"All of the kids hated soccer because they didn't understand it," he says. "I taught them how to pass and how cool it could be if they worked together and slowly it worked. I felt like I had given them a sense of purpose."

When Parker is not busy encouraging others to stay healthy, he's focused on keeping himself healthy. In any free time, the Kappa Sigma fraternity member plays sports with friends and lifts weights in order to stay healthy for Air Force ROTC.

Fitness is an important part of his life, sure, but he says it's not the only thing he's focused on.

"My motto is to always stay happy," he says. "I'm not sure what I'm going to do after Missouri S&T, but I do know I'm going to make it a priority to be happy."



BREW SISTERS

It has been said that beer brings people together. At least that was the case for Missouri S&T students and Zeta Tau Alpha sorority sisters Delaney Sexton and Courtney Mandeville, who worked together in co-op positions at Anheuser-Busch in St. Louis.

Sexton and Mandeville worked with S&T's Cooperative Education Program, which gives students employment opportunities to gain practical degree-related work experience before they graduate. The program is set up so that students can take a break from studies and work full time for one semester or a combination of semesters, which allows eight to nine months of work experience versus the three summer months allowed for internship positions.

Sexton, a senior in engineering management and mechanical

engineering from Independence, Missouri, worked in operations, where she managed four bottling lines at the company's historic Bevo Bottling Plant. She says she had 30 operators reporting to her at any given time during her co-op, which concluded in July.

Mandeville, a senior in chemical engineering from Belleville, Illinois, worked through December as a brewing quality and operations group manager.

Each had to deal with problems on the fly. In some cases, they worked together to find a solution.

"Sometimes Courtney sends me beer with higher levels of oxygen," Sexton says. "Or maybe my meter's off. Then we have to call up her people to test the beer."

"We have to react quickly," Mandeville adds.

They have also had to learn how to manage a group of employees that are sometimes much older and certainly more experienced than themselves.

"You can't come in thinking you know everything," says Sexton, adding that she gleaned as much from her co-workers as they did from her. Applying what she learned in engineering management, Sexton says she got to know her operators on a personal level, which helped earn their respect.

Mandeville says she learned a lot from her superiors, as well. "It's an open-door policy. It could be a stupid question, but they will answer it for you. They are there to help you grow."

"Actually, it's more of a no-door policy," jokes Sexton.

Indeed, there are no corner offices on A-B's St. Louis campus. Regardless of title, office employees work in cubicles with no door.

The A-B co-op program has been around since the mid-'90s, and many S&T students have been through it, according to Jane Killebrew, director of brewing quality at A-B.

"I think the biggest thing is you watch them come in at the very beginning, and they don't know anything about making beer," says Killebrew. "But they will leave at the end of their co-op term and know an incredible amount about making beer."

"It's amazing how much a person can learn in a semester or a summer," she adds. "It's one of the most rewarding things in the world for me to watch — to see them learn, grow and evolve. The ones that really love it usually come back to work full time."



MODOT, S&T MERGE FOR RESEARCH

“THIS IS NOT A GAME WHERE YOU CAN JUST DRIVE WHEREVER YOU WANT.”

Missouri S&T researchers are using a Missouri Department of Transportation grant to help determine if alternate signage could make drivers — and workers — safer in work zones.

Using the cab of a white Ford Ranger XLT with split bucket seats as their driving simulator, Missouri S&T's team is evaluating merge sign configurations for work zones along the state's roadways. Three projectors are mounted on the truck's roof to show a simulated straight stretch of Interstate 70 on a concave screen. Drivers

control the steering wheel and acceleration and brake pedals to go through four merge configurations, two each for left and right.

“We do this under normal conditions,” says principal investigator Dr. **Suzanna Long**, interim chair and associate professor of engineering management and systems

engineering. "If you wear glasses, wear them; if you use a hearing aid, wear it; if you take medications, take them."

The study is designed to reflect Missouri's driving demographics, with drivers in four age ranges recruited to participate. In the simulations, drivers maneuver through the current Manual on Traffic Control Devices (MUTCD) work zone and then an alternate one.

There are three phases through which the 18-month project is evaluated, Long says. One researcher records drivers' simulation performance, measuring speed, steering and braking. Another researcher records a driver's body language, facial expressions and anything said. Participants are then asked to take a survey to assess their attitudes about the work zones.

"I think it's great," says Missouri Highway Traffic Safety engineer John Miller. "It's got a lot of upside."

Using a real truck is important for the study's efficacy, says co-PI Dr. **Ming Leu**, the Keith and Pat Bailey Missouri Distinguished Professor of Integrated Product Manufacturing. "This is not a game where you can just drive wherever you want," he says.

The project's budget is \$156,000, with \$120,000 coming from MoDOT.

Leu, Dr. **Dincer Konur**, assistant professor of engineering management and systems engineering, and Dr. **Ruwen Qin**, associate professor of engineering management and systems engineering, are co-PIs on the project.

Samareh Moradpour, a Ph.D. student in EMSE from Tehran, Iran, records the body language. **Shuang Wu**, a master's student in mechanical engineering from Beijing, records the drivers' performance. □

EMSE

BY THE NUMBERS

747

Total student enrollment

629

Male students

118

Female students

5

Degrees in Engineering Management and Systems Engineering

9

ENGINEERING MANAGEMENT CERTIFICATES

Engineering Management
Financial Engineering
Human Systems Integration
Leadership in Engineering Organizations
Lean Six Sigma
Military Construction Management
Project Engineering & Construction Management
Project Management
Safety Engineering

4

SYSTEMS ENGINEERING CERTIFICATES

Computational Intelligence
Model Bases Systems Engineering
Network Centric Systems
System Engineering

AVERAGE STARTING SALARIES

\$62,768

Engineering Management (BS)

\$73,500

Engineering Management (MS, PhD)

\$71,800

Systems Engineering (MS, PhD)

ACCESS FOR ALL

Imagine all of the things students must do on a daily basis to get to class.

Things like opening doors, reading room numbers or even deciding where to sit are simple for most. But for some it's not that easy.

Students with limited muscle movement, those who use a wheelchair or have reduced vision may have difficulty with the things we take for granted.

We noticed several things that were not up to the current Americans with Disabilities Act (ADA) standards, and set out to improve things.

EMSE worked with Connie Arthur, advisor for Disability Support Services, and Mike Bassett, supervisor of skilled trades and physical facilities, to walk through the building, room by room, floor by floor, and set a plan of action.

By summer 2016, all of the door handles will be switched to the lever style and all room numbers will be switched out to new ones. New door signs will feature easy-to-read colors, and Braille will be located beneath the numbers.

If you would like to find out if your space meets ADA standards or learn what you can do to improve it, please go to the ADA's website ada.gov.

COMPLEX ADAPTIVE SYSTEMS

Missouri S&T brought together 90 leading technologists and academic experts during the fifth annual Complex Adaptive Systems (CAS) Conference to discuss the complexities, design and operation of the multifaceted systems of the future. This year's conference ran Nov. 2–4, 2015, in San Jose, California, and featured representatives from 21 nations, including 78 thought leaders who presented advanced research papers on a variety of subjects. The EMSE department was a sponsor for this event and Dr. **Cihan Dagli**, professor of engineering management and systems engineering and founder and director of the systems engineering graduate program, served as the conference director.

KEYNOTE SPEAKERS

Seven keynote speakers presented this year on topics related to the conference theme "Engineering Cyber Physical Systems: Machine Learning, Data Analytics and Smart Systems Architecting."

- Olivier de Weck of MIT — "When is complex too complex?"
- Amrita Basu of Lockheed Martin — "Exploiting Big Data in Precision Medicine."
- Charles University's Iveta Mrázová — "Deep Neural Networks and Their Role in the Quest for Human-Like Brain Power."
- Dr. Sajal K. Das of Missouri S&T — "Beyond Cyber-Physical Era: What's Next?"
- Mike Calcagno of Microsoft — "Assistance Patterns: The DNA that will make Digital Assistants Helpful."
- The MITRE Corp. joint presentation — "System Engineering Research Needs for Cyber Physical Systems."
- Robert Hoffman of the Institute for Human and Machine Cognition — "Challenges for a Theory of Complex Cognitive Work Systems."

BEST PAPERS IN THE APPLICATION CATEGORY

An awards ceremony was also held for the authors of the best papers in the Application and Theoretical categories.

- **Best Paper:** "Extracting Meaningful Entities from Human-Generated Tactical Reports" by

Jinhong K. Guo, David Van Brackle, Nicolas LoFaso and Martin O. Hofmann of Lockheed Martin Advanced Technology Laboratories.

- **First runner-up:** "Assessment of Selected Methods for Estimating Chemical Transport Parameters from Computed Tomographic Imaging" by S.H. Anderson and R.L. Peyton of the University of Missouri-Columbia, and D.J. Heinze of Environ.
- **Second runner-up:** "A Co-cooperative Evolutionary Algorithm for Flexible Scheduling Problem under Uncertainty" by Yan Wang, Lin Lin and Lu Sun of Dalian University of Technology, China; Mitsuo Gen of Fuzzy Logic Systems Institute, Japan; and Hiroshi Kawakami of Kyoto University, Japan.

BEST PAPERS IN THE THEORETICAL CATEGORY

- **Best Paper:** "Adaptation of Spike-Timing-Dependent Plasticity to Unsupervised Learning for Polychronous Wavefront Computing" by Fred Highland and Corey B. Hart of Lockheed Martin IS&GS.
- **First runner-up:** "Multidimensional Joint Scale and Cluster Analysis" by Mika Sato-Ilic of the University of Tsukuba, Japan.
- **Second runner-up:** "Analyzing Responses from Likert Surveys and Risk-Adjusted Ranking: A Data Analytics Perspective" by Abhijit Gosavi of Missouri S&T.

MISSOURI S&T PH.D. STUDENT PAPERS

On Wednesday afternoon, several Ph.D. students in the engineering management and systems engineering department presented during the Cyber Physical Systems: Complex Systems Architecture Assessment session. Papers included:

- "A Pragmatic Method for Assessing Systems Architectures during the Architecture Generation Process with a Focus on Repurposing Business Software to Systems Engineering" by Kyle Buller.
- "A Model for Assessing UAV System Architectures" by Andrew Renault.
- "Selecting Attributes, Rules and Membership Functions for Fuzzy SoS Architecture Evaluation" by Louis Pape, Siddhartha Agarwal and Dr. Cihan Dagli.

SPRING LUNCHEON

The 22nd annual Spring Luncheon was held on April 17, 2015. It was hosted by the American Society for Engineering Management (ASEM) and sponsored by the Missouri S&T Academy of Engineering Management. The luncheon is held every spring in celebration of the current students and future graduates to wish them well in their future endeavors. Along with the presentation of awards of achievement, new members were inducted into the Epsilon Mu Eta honor society.

- **Nnameka Amaeshi** received the 2015 Outstanding M.S. Research Award. His advisor was Dr. Ruwen Qin.
- **Varun Ramachandran** received the 2015 Outstanding Ph.D. Research Award. His advisor was Dr. Suzanna Long.
- **Sean Schmidt** received the 2015 Outstanding Graduate Teaching Award.
- **Elaine Smith** received the Outstanding Senior Award.
- **Delaney Sexton** received the Don Myers Leadership Award.

YEAR IN REVIEW: ASEM STUDENT CHAPTER

ASEM students hosted many regular events including the department luncheon, breakfast socials with the faculty, the LEAN Manufacturing Workshop and a career fair prep-session for engineering management students. In addition, there were several new guest speakers and plant tour opportunities.

GUEST SPEAKERS

Dr. **Joan Schuman** spoke to ASEM students about the graduate programs for both engineering management and systems engineering disciplines and **Courtney Wyatt**, a successful business owner from Kansas City, spoke about the importance of prioritization and goal setting. ASEM students had the chance to attend fun and educational plant tours at Hussmann Corp., a world-class manufacturer; Brewer Science, a silicon wafer production facility; and Anheuser-Busch Brewery, the leading American brewer.

MENTORING PROGRAMS

The two mentoring programs in the ASEM student chapter continue to grow and develop within the society. The In-Department Mentoring Program pairs experienced upperclassman with freshmen and transfer students to give advice about which classes to take, emphasis areas, the department

itself and life at Missouri S&T in general. This past year, 30 ASEM members were paired for this mentoring program and its growth is expected to continue in the future. The Academy Mentoring Program gives all students the chance to be paired with an academy member who can help students using successful industry experience with classes, internships and co-ops, and career paths. The academy mentors are a great asset to the ASEM students and have been greatly appreciated by all involved.

FUNDRAISING SUCCESS

ASEM focused heavily on fundraising for the 2014–15 school year. Continuing the past fundraiser of Engineering Management polo sales to students, faculty and staff, the organization raised over \$1,500. The First Annual Cornhole Tournament also broke ground as a new fundraiser for the organization to donate to local Rolla charities and gave students a chance to socialize and have fun for a good cause.

A NOTE OF THANKS

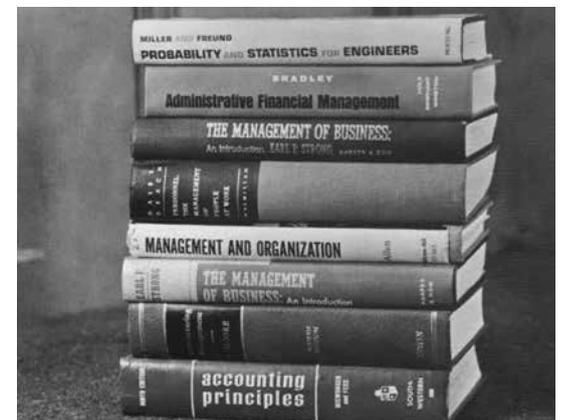
The students of ASEM would like to thank all faculty and staff involved in this past year's success, especially faculty advisor, Dr. **Ivan Guardiola**. Without the help of our very supportive department, ASEM would not be able to grow and thrive as it is today.

SHARE YOUR MEMORIES

Missouri S&T is defined by its students, faculty, staff, alumni and the local community. As this department approaches its 50th anniversary in 2016 and the university prepares for its sesquicentennial in 2020, we need your help to tell the story of one of the nation's top research universities.

Among the many activities and projects planned to commemorate the 150th anniversary is a new history book of the university. Dr. **Larry Gragg**, Curators' Teaching Professor of history, is writing the book and is seeking submissions from alumni about their experiences on campus through the years.

To submit your memories and photos for the Missouri S&T history book project, email 150@mst.edu.



ALUMNI FOCUS: LIKE FATHER, LIKE SON

WE ASKED KEVIN FRITZMEYER, EMGT'85, AND HIS SON JEFF FRITZMEYER, EMGT'14, ME'14, A FEW QUESTIONS ABOUT THEIR EXPERIENCES AT S&T. HERE ARE THEIR RESPONSES.

WHEN DID YOU START AT UMR OR S&T?

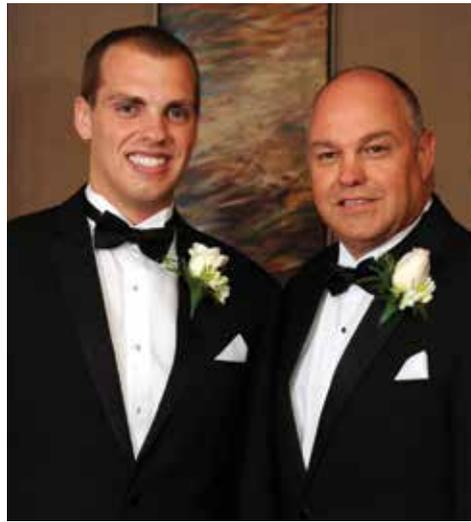
Kevin: I started in the fall of 1979 and graduated in May 1985 with a B.S. in engineering management with a mechanical engineering preference.

Jeff: I started at S&T in the fall of 2010 and graduated in December 2014 with a dual degree in engineering management and mechanical engineering.

IF SOMEONE WERE TO ASK YOU WHY YOU STUDIED ENGINEERING MANAGEMENT, HOW WOULD YOU RESPOND?

Kevin: I chose engineering management because I knew I wanted to be a businessman and run a company. The technical (mechanical engineering preference) along with the business classes was the perfect combination. I started in ceramic engineering but changed to engineering management with the mechanical engineering preference because I lost interest in the program. The appeal of engineering management was the broad engineering-based background with the business overview. I knew I wanted to start on the plant floor when I graduated.

Jeff: Growing up I always knew I would be an engineer. Math and science were my strong points, and I liked to build, construct, and invent. I also knew that someday I wanted to run my own company, be my own boss, or a CEO. Beyond that, the influence of my dad and Dr. Raper drove me to the decision to dual major. Engineering management is what I wanted to do, while mechanical engineering was where I needed to start. The mechanical engineering degree took the technical parts of the EMGT degree a few steps further and opens the doors to a wide variety of starting career options. EMGT however provides the tools and skills needed to excel in those jobs and stand out from those around you.



Engineering management teaches you about everyday real topics. Never again will I use my upper-level technical mechanical engineering classes. However, every day I am using operations management, project management, accounting and finance, strategic management, etc. In order to be successful in a production environment, you need to understand the process as well as how to make money, and how to manage people. Engineering management gives you all of those.

DID YOU WORK WHILE PURSUING YOUR DEGREE? AND IF SO, WHERE?

Kevin: I worked seven summers at Six Flags during high school and college, most as a supervisor in the food service department. I started washing dishes and cooking. I learned a lot about managing people. After graduation I started at Coke St. Louis out of college, running the second shift in a union production plant. I was promoted to director of engineering after six months. From there I went to work at Barry-Wehmiller and stayed there for 15 years. I started the Barry-Wehmiller design group during that time (currently over 1,000 engineers) and ran other packaging equipment companies for them. I then moved to Cameron Holdings and worked there for 15 years. I was responsible for two platform companies, Cloud/Multi-Pack where I served as president, and USA Tank where I served as CEO. I am currently the CEO of FlexXray in Dallas, Texas.

Jeff: Similar to my dad I worked at Six Flags through my first two years at school and in high school. I started as a rides operator in high school, and quickly worked my way up to an operations supervisor. My sophomore year I took a mechanical engineering co-op with Control Devices LLC. I spent eight months working on process control, new product design and testing, and value-engineering projects. The summer after my junior year, I interned as a manufacturing engineer with Eaton Corp. in Olean, New York, in a former Cooper Power Systems plant. I spent that summer working on process improvement, lean manufacturing, and ergonomic improvement projects. My last summer I spent as a marketing intern again for Eaton, but this time at home for a former Cooper Bussmann plant. As a marketing intern, I worked on engineering based projects to improve the marketability of some of the main catalog of fuses, and some stocking strategies to reduce inventory costs, while improving customer lead time. After graduation I went to work for Anheuser-Busch in St. Louis. I started in their Brewery Development Program, a 27-month developmental rotation program, where my first position was the midnight shift warehouse manager. Immediately out of school I was managing a group of 25 union workers, and did about zero engineering. I relied heavily on the skills I had learned from both managing people at Six Flags as well as EMGT coursework. After eight months I got promoted out of the BDP program as the maintenance manager for utilities, now managing two salaried group managers who directly supervise a staff of 31 craft technicians.

OTHER NOTES OF INTEREST:

Kevin is a member of the Academy of Engineering Management. He has frequently returned to campus to speak to classes such as basic management, productions and operations management, engineering economy, and strategic management. He brings a lot of wisdom and is an avid promoter of the degree and the value it has provided. Jeff will soon be following in his dad's footsteps, returning to campus to speak to engineering management students. Kevin's mom and Jeff's grandmother, Edna (Fritzmeier at the time) Weatherford graduated with a B.A. in English from Missouri S&T in 1972!

IN PRINT

A new book authored by a Missouri S&T researcher discusses best practices on how to be an effective, results-oriented engineer by looking at real-world case studies of productive maintenance.

Dr. Elizabeth Cudney, an associate professor of engineering management and systems engineering at Missouri S&T, co-wrote *Total Productive Maintenance: Strategies and Implementation Guide*. This is Cudney's fifth book.

Kellie Grasman, a lecturer in engineering management and systems engineering at Missouri S&T, won the Joint Publishers Book of the Year Award at the 2015 Industrial and Systems Engineering Research Conference for a textbook she co-authored titled *Fundamentals of Engineering Economic Analysis*.

Grasman shared the award with her coauthors: Dr. John A. White, chancellor emeritus of the University of Arkansas; Dr. Kim LaScola Needy, head of industrial engineering at Arkansas; and Dr. Kenneth Case and Dr. David Pratt, professors of industrial engineering and management at Oklahoma State University.

S&T KICKS OFF SARCHET SEMINAR SERIES

In advance of its 50th anniversary in fall 2016, the engineering management and systems engineering department launched the Bernie Sarchet Graduate Seminar Series.

Dr. Simon Philbin, director of program management at Imperial College London, presented the inaugural lecture in October. His presentation, titled "Insights from Managing Complex Research, Technology and Engineering Projects in Academia," highlighted the practical applications of project and engineering management. He drew on experience gained in a university environment and through extensive engagement with industry.

"Dr. Philbin is a wonderful inaugural speaker for the Sarchet Seminar Series," says Dr. Suzie Long. "He is an engaging speaker and truly embodies the ideals of the engineering management profession as envisioned by Sarchet. He set an amazing tone for the seminar series and the anniversary celebration."

Philbin's seminar highlighted practical applications of project and engineering management by drawing on his experience in a university environment gained



through extensive engagement with industrial companies.

Philbin is director of programme management at Imperial College London, where he leads the programme management office (PMO). The PMO is focused on supporting research programs and projects across the university. This includes international research programs, European Union collaborative research projects and commercial projects.

He is published widely across areas including university-industry research collaboration, project management, technology management and chemistry. He is a recipient of the Merritt

Williamson Best Paper Award from the American Society for Engineering Management and the Rod Rose Best Paper Award and Best Annual Symposium Paper Award from the Society of Research Administrators International.

The series is named after **Bernie Sarchet**, who joined Missouri S&T in the mid-1960s as the founding chair of the engineering management department.

"Sarchet is considered by many to be the founder of engineering management as a discipline worldwide," says Long.

Sarchet, who retired in 1981, secured approval for a Ph.D. program in engineering management at Missouri S&T. He also was a founding member and first national president of the American Society for Engineering Management. After retirement, he helped raise funds for the Engineering Management Building, helped develop the Order of the Golden Shillelagh and spearheaded the development of the Video Communications Center at Missouri S&T, which led to membership in the National Technological University, a consortium of universities that provide distance learning via satellite.

6 THINGS YOU SHOULD KNOW ABOUT 2015 ASEM CONFERENCE

Engineering management and systems engineering (EMSE) faculty and programs received multiple honors at the 2015 American Society for Engineering Management (ASEM) International Annual Conference.

1 ASEM Founders Award for Best Undergraduate Program

Missouri S&T's undergraduate program in engineering management was selected for this award in part for its faculty involvement in ASEM and other professional societies, and its contributions to engineering management education and practice.

2 ASEM Founders Award for Best Student Chapter

For the sixth time since 2002, the Missouri S&T chapter of ASEM took home the Best Student Chapter Award. ASEM members submitted a yearly report outlining the chapter's current success. The heavy involvement of all 46 student members and the continuous goal for improvement allowed the 2014–15 school year to be very successful.

3 Dr. Beth Cudney named Chair-Elect for the ASEM Fellows

Dr. **Beth Cudney** was named chair-elect for the ASEM Fellows for 2015–16. she will serve as chair of the Fellows from 2016–17.

4 John Bade recognized as Engineering Manager of the Year

John Bade, EMgt'85, MS EMgt'87, of the Boeing Co. and an associate adjunct professor of EMSE, was recognized for his contributions to the advancement of engineering management. Bade joined Boeing in 1988.

5 Dr. Suzie Long named Fellow, earns service award

Dr. **Suzie Long** was named Fellow for her engineering management accomplishments and service to the society. She also earned the Frank Woodbury Special Service Award in part because of her support of EMJ and her repeated service as chair.

6 Five faculty members receive commendation awards

Dr. **Beth Cudney**, Dr. **Suzie Long**, Dr. **Susan Murray**, Dr. **Henry Wiebe** and Dr. **Brian Smith** all earned the ASEM World Headquarters Service Commendation Award.

CAPSTONE SENIOR DESIGN PROJECTS

= ALUMNI+PARTNERSHIPS

A traditional capstone senior design course was scheduled to be implemented into the curriculum beginning in the Fall 2009 semester. However, due to ABET concerns, it was necessary to offer the class during the Spring 2009 semester. The course description is as follows: "Open-ended design projects will be addressed with small teams. The emphasis will be on solving industry-based projects that are broad in nature and which will require the students to incorporate the knowledge and skills acquired in earlier course work in the solution of the problems."

The intent to solve industry-based problems presents a moderate challenge for our program. Due to our location in Rolla, as compared to larger metropolitan areas, industry partners are more limited. Fortunately several of our alumni and the organizations they work for have partnered with us multiple times in the past. However, the locations still have provided a bit of a challenge.

Our first industry partner was Invensys Controls in West Plains, Missouri. Located approximately 100 miles from Rolla, Invensys partnered with us for three consecutive semesters with a wide range of projects. Students tackled real-world problems, worked with team members at the plant, and gained useful experience outside of the traditional classroom setting.

Kristen Beckmeyer Fielder, EMgt'05, was our alumni contact and partner in this process. **Eric Foster**, EMgt'05, arranged for several of our student teams to partner over multiple semesters. His firm at that time was

Synergetics in O'Fallon, Missouri, approximately 100 miles away. Again, the teams gained valuable experience working with an industry partner.

Two other industry partners, were also established through alumni contacts. Aero Fil Technologies in Sullivan, Missouri, approximately 45 miles from Rolla, has hosted several teams over multiple semesters. **Greg Wilke**, EMgt'08, was instrumental in establishing this partnership, which gave our student teams valuable exposure to lean principles and practices. **Christina Stage**, EMgt'08, a lean enterprise manager for Silgan Plastic Food Containers, hosted nine design teams over two semesters in the Union, Missouri, facility. The student teams were exposed to a variety of issues in the facility and provided potential solutions. This facility was located about 60 miles from Rolla.

Recently, Dr. **William V. Stoecker**, a local dermatologist and entrepreneur, has partnered with our students multiple times. The great benefit to this relationship is that Dr. Stoecker is located in Rolla, and even has an office on campus! In addition, the projects expose students to business and market development opportunities and the challenges that come with them.

To be sure, the program has had other partners since 2009. We are continually seeking industry partnerships that will allow our students to experience real-world problem-solving opportunities. Please contact the department if you or your organization has capstone design opportunities.

ABET ACCREDITATION

The engineering management undergraduate degree program founder, Professor **Bernie Sarchet**, understood the need for an accredited engineering program. So when the program was moved into the School of Engineering, it was essential for the program to become accredited.

The Accrediting Board for Engineering and Technology (ABET) is the entity that grants accreditation in various commissions. Engineering programs are accredited through the Engineering Accreditation Commission (EAC) and usually under criteria specific to the program name. The engineering management program received its initial six-year accreditation under the "general criteria" in 1979, but when criteria for engineering management and similarly named programs were developed, accreditation was granted under that specific criteria.

The undergraduate degree program has been granted full accreditation, which generally means accreditation is granted for a six-year period, since its initial application for accreditation. As reported in the previous newsletter, the program was awaiting the results from 2013–2014 accreditation cycle. All engineering programs and the computer science department (Computing Accreditation Commission of ABET) began preparations in the Fall semester of the accreditation cycle.

Our program began collecting materials required for the team visit in Fall 2013, and prepared the self-study report for submission to

ABET on June 30, 2014. The ABET team visited the campus in October 2014. Initial assessments based on a review of program self-studies and the campus visit were delivered at the end of the visit. Programs then made responses to the findings and draft statements from ABET were given to each campus program in February 2015. Some programs submitted additional information, which was then evaluated, and final statements for the accreditation cycle occurred in August 2015. We are very pleased to report that the engineering management program was granted accreditation once again for the full six-year cycle.

Dr. **Stephen A. Raper**, associate professor and associate chair of undergraduate studies for the engineering management program, was appointed as ABET campus coordinator in Fall 2012. In this role, he was responsible for all coordination and reporting requirements to ABET, and served as the direct interface for the campus. This effort required coordination with 15 engineering programs and a computer science program, multiple campus administrative units, multiple academic support departments (mathematics, chemistry, etc.), and a variety of other tasks. He is currently continuing in this role as a part of the College of Engineering and Computing.

EMSE FRIENDS SERVE OUTSIDE THE DEPT

We congratulate our EMSE faculty on their administrative positions on the Missouri S&T campus.

- Dr. **Robert Marley**, provost and executive vice chancellor for academic affairs
- Dr. **Venkat Allada**, vice provost for graduate studies
- Dr. **Susan Murray**, interim chair of psychological science

ALUMNI NEWS



Reginald Nations, pictured with interim chair **Dr. Suzie Long**, visited the department in the fall of 2015. Nations was one of eight graduates to receive the first bachelor's degree in 1968. He enjoyed reminiscing about his time here and looking at a copy of the 1968 *Rollamo* yearbook located in the EMSE office.

FACULTY ACCOMPLISHMENTS

Keep up with our faculty's latest accomplishments. From books to grants to conferences, our faculty are sharing their expertise in their fields. The following list features their research, publishing and other academic activities outside of the classroom.

DR. STEVEN CORNS

GRANTS

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," (Continuation) U.S. Geological Survey, \$89,998, March 2015–February 2016, Co-PI, 50% effort.

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," U.S. Geological Survey, \$95,863, March 2014–February 2015, Co-PI, 50% effort.

"Associate Systems Engineering Professional Training," Honeywell FMT, LLC, \$30,000, May 2015–July 2015.

PUBLICATIONS

Varun Ramachandran, Suzanna Long, Tom Shoberg, Steven Corns, and Hector Carlo, (2015) "Identifying Geographical Interdependency in Critical Infrastructure Systems Using Open Source Geospatial Data in Order to Model Restoration Strategies in the Aftermath of a Large-Scale Disaster," accepted to *International Journal of Geospatial and Environmental Research*.

Varun Ramachandran, Suzanna Long, Tom Shoberg, Steven Corns, and Hector Carlo, (2015) "Framework for Modeling Urban

Restoration Resilience Time in the Aftermath of an Extreme Event," accepted to *Natural Hazards Review*.

Bhanuchander Poreddy, Steven Corns, Suzanna Long, and Ahmet Soylemezoglu, (2015) "Dynamic Mathematical Model Framework of Complex Utility and Logistics System Interactions using Object-Oriented Approach for Forward Operating Bases" accepted to *Engineering Management Journal*.

DR. ELIZABETH CUDNEY

JOURNAL PAPERS

Qin, R., Cudney, E., and Hamzic, Z., (2015) "An Optimal Plan of Zero-Defect Single-Sampling by Attributes for Incoming Inspection in Assembly Lines," *European Journal of Operational Research*, Vol. 246 (3), pp. 907–915.

Jobi-Taiwo, A. and Cudney, E., (2015) "Mahalanobis-Taguchi System for Multiclass Classification of Steel Plates Fault," *International Journal of Quality Engineering and Technology*, Vol. 5 (1), pp. 25–39.

Gillis, W., and Cudney, E., (2015) "A Standard for the Commissioning Process," *Frontiers of Engineering Management*, Vol. 2 (1), pp. 39–51.

Ghasemi, E., Aghaie, A., and Cudney, E., (2015) "Mahalanobis Taguchi System — A Review," *International Journal of Quality & Reliability Management*, Vol. 32 (3), pp. 291–307.

Elrod, C., Stanley, S., Flachsbar, B., Hilgers, M., and Cudney, E., (2015) "Assessing Professional Behavior Perceptions Between Computing, Engineering, and Business Students and Hiring Employers," *Issues in Information Systems*, Vol. 16 (1), pp. 69–79.

Cudney, E., Murray, S., and Pai, P.2, (2015) "Relationship Between Lean and Safety," *International Journal of Lean Enterprise Research*, Vol. 1 (3), pp. 217–231.

Riley, T., and Cudney, E., (2015) "Defensive Routines in Engineering Managers and Non-Engineering Managers — A Case Analysis," *International Journal of Engineering Business Management*, Vol. 7 (8), pp. 1–10.

Sharma, N., and Cudney, E., (2015) "Application and Limitation of Axiomatic Design Complexity in Quality Engineering," *International Journal of Quality & Reliability Management*, Vol. 32 (1), pp. 3–17.

Stanley, S., Elrod, C., Cudney, E., and Fisher, C., (2015) "Empirical study utilizing quality function deployment to develop an international marketing

strategy" *Sustainability*, Vol. 7, pp. 10756–10769.

Gillis, W., and Cudney, E., (2015) "A Methodology for Applying Quality Function Deployment to the Commissioning Process," *Engineering Management Journal*, Vol. 27 (4).

BOOKS

Agustiady, T., and Cudney, E., (2015) *Total Productive Maintenance: Strategies and Implementation Guide*, CRC Press, New York, NY.

FUNDED RESEARCH

Cudney, E., (P.I.) "Incorporating Blending and eLearning in Online Six Sigma Curriculum" Missouri S&T eFellows Program, \$4,000. August 2015–August 2016.

Cudney, E., (P.I.) "Evaluating the Impact of Interactive Technology in the Classroom on Student's Perception of Learning" Center for Educational Research and Teaching Innovation, \$1,980, June 2015–June 2016.

Cudney, E.,(P.I.) and Guardiola, I., "Development of a Bed Management Control Tower" Department of Veterans

Affairs, \$64,532. September 2014–September 2015.

Cudney, E.,(P.I.) and Murray, S., "Engineering Gamification for Successful User Engagement in the Knowledge Management System" Department of Veterans Affairs, \$56,150. September 2014–September 2015.

Cudney, E., (P.I.) "Incorporating eLearning in Quality Engineering Curriculum" Missouri S&T eFellow Program, \$4,000, August 2014–August 2015.

KEYNOTE PRESENTATIONS

Cudney, E., (2015) "A Standard for the Commissioning Process," Proceedings of the International Summit Forum on Engineering Science and Technology Development Strategy. Funded presentation by the Chinese Academy of Engineering.

DR. DAVID ENKE

FUNDED RESEARCH

RT 109: Computational Intelligence Approach to System of Systems, U.S. Department of Defense, Stevens Institute of

Technology: Systems Engineering Research Center, \$129,140, Jan. 1, 2014–Jan. 31, 2015, Co-PI (10% effort).

Applied Engineering Management Program — Master of Science in Engineering Management, King Saud University, \$483,399, Jan. 1, 2012–July 31, 2015, PI (50% effort).

CONFERENCE PROCEEDINGS

Mehdiyev, N., J. Krumeich, D. Enke, D. Werth, and P. Loos, "Determination of Rule Patterns in Complex Event Processing Using Machine Learning Techniques," *Procedia Computer Science*, Vol. 61 (2015): 395-401.

Wiles, P.S., and D. Enke, "Optimizing MACD Parameters via Genetic Algorithms for Soybean Futures," *Procedia Computer Science*, Vol. 61 (2015): 85-91.

Almasi Monfared, S., and D. Enke, "Noise Canceling in Volatility Forecasting Using an Adaptive Neural Network Filter," *Procedia Computer Science*, Vol. 61 (2015): 80-84.

Wiles, P.S., and D. Enke, "A Hybrid Neuro-Fuzzy Model to

(continued on next page)

YOU'RE INVITED

Come back to where it all began this October and help engineering management and systems engineering celebrate our 50th anniversary.

We will kick off the celebration with a reception on Thursday, Oct. 13, and end with a tailgate party before the Homecoming football game on Saturday, Oct. 15.

Missouri S&T was the first university to offer an engineering management program and we're still one of the top programs in the field. Help us commemorate 50 years of excellence this Homecoming.

We hope to see you there!

U.S. ARMY ENGINEER CAPTAINS CAREER COURSE

Missouri S&T, in coordination with the U.S. Army Engineer School, continues to lead the way in providing outstanding opportunities for professional education. Officers may choose to pursue a degree in engineering management, environmental engineering, civil engineering or geological engineering. In 2015, 96 of the officers accepted chose to pursue a degree in engineering management.



◀ RUWEN QIN

Dr. **Ruwen Qin** was recently promoted to associate professor with tenure effective Sept. 1, 2015. She joined the EMSE department as an assistant professor in 2008. Her research interests include data-driven decision modeling, financial engineering, workforce engineering, and their applications to healthcare management, energy systems management, manufacturing and services operations, and complex systems modeling, particularly in largely uncertain settings. Qin has published 15 journal articles, 13 refereed conference proceedings and three book chapters, and has secured 17 research grants totaling over \$1.5 million in funding. Qin is active in professional service. She is an associate editor of *Engineering Management Journal*, and a technical chair of the 2019 International Conference on Production Research. She has been a member of INFORMS since 2004.

DECEMBER 2015 MASTER'S RECIPIENTS AND THEIR THESES

Julie Ezzell, M.S., *Learning Style Preferences and Quality Function Deployment for Curriculum Development*, December 2015. Advisor: Dr. Elizabeth Cudney

Raja Anvesh Baru, M.S., *A Decision Support Simulation Model for Bed Management in Healthcare*, 2015. December 2015, Advisor: Dr. Elizabeth Cudney

2015 PH.D. RECIPIENTS AND THEIR DISSERTATIONS

Dr. Shikhar P. Acharya, "Detection and Recognition of R/F Devices Based on their Unintended Electromagnetic Emissions Using Stochastic and Computation Intelligence Methods," Dec. 12, 2014: Advisor Dr. Ivan Guardiola

Dr. Siddharth Agarwal, (ABSTRACT) "Computational Intelligence-Based Complex Adaptive System-of-System Architecture Evolution Strategy," May 11, 2015: Advisor: Dr. Cihan Dagli

Dr. Isam H. Algrawi, "The Engagement of Expert Opinions in the Modeling of Multi-Attribute Decision Making for the Selection of Projects Delivery Methods in Building Construction" Dec. 11, 2014: Advisor: Dr. Eric Showalter

Dr. Varun Ramachandran, "Modeling Supply Chain Interdependent Critical Infrastructure Systems," April 2015: Advisor: Dr. Suzanna Long

Forecast the Soybean Complex," *Proceedings of the 2015 American Society of Engineering Management Conference*, Indianapolis, IN, October 2015.

Agarwal, S., L. Pape, C. Dagli, N. Ergin, D. Enke, A. Gosavi, R. Qin, D. Konur, R. Wang, and S. Gottapu, "Flexible and Intelligent Learning Architectures for SoS (FILA-SoS): Architectural Evolution in Systems-of-Systems," 2015 Conference on Systems Engineering Research, *Procedia Computer Science*, Vol. 44 (2015): 76-85.

DR. IVAN GUARDIOLA

PUBLICATIONS

Baru, P.A., Cudney, E.A., Guardiola, I.G., Cahill, W.I., Phillips, R.E., Mutter, B.L., Warner, D.L., and Masek, C.M., "A Decision Support Simulation Model for Bed Management in Healthcare." *Journal of Healthcare Management Science* (Submitted Sept. 2015).

Baru, R.A., Cudney, E.A., Guardiola, I.G., Warner, D.L., and Phillips, R.E., "Systematic Review of Operations Research and Simulation Methods for Bed Management". *Proceedings of the 2015 Industrial and Systems Engineering Research Conference*, Nashville, Tennessee, May 30–June 2, 2015.

Kayani, W., Acharya, S. P., Guardiola, I. G., Wunsch, D. C., and Schumacher, B. (2015). "A Hybrid of Computational Intelligence Techniques for Shape Analysis of Traffic Flow Curves." *Transportation Research Board 94th Annual Meeting* (No. 15-3767).

GRANTS

Development of a Bed Management "Control Tower" Agency: Veterans

Administration. Co-PI \$64,532 2014–2015.

IMS Membership: Wireless Ad Hoc Networking Oil and Gas Service. Agency: AmpliSine Labs LLC. NSF Industry/University Cooperative Research Center (I/UCRC) on Intelligent Maintenance Systems (IMS). Co-PI \$120,000 2013–2016.

US PATENTS

Multi-Path Wireless Mesh Networks in Oil and Gas Fields App #14299723 EFS ID #19251017 Zawodniok, M., Guardiola I.G., Bateman, D., Phillips, A., Maran, A., and Price, N.D.

DR. DINCER KONUR

PUBLICATIONS

Economic and environmental comparison of grouping strategies in coordinated multi-item inventory systems with Brian Schaefer, article in press at *Journal of the Operational Research Society*.

Economic and environmental considerations in a continuous review inventory control system with integrated transportation decisions with Brian Schaefer, *Transportation Research Part E* (80), pp.142–165.

DR. SUZANNA LONG

JOURNAL ARTICLES

Ramachandran, Varun, Shoberg, Tom, Long, Suzanna, Corns, Steven M. and Carlo, Hector J. (2015) "Identifying Geographical Interdependency in Critical Infrastructure Systems Using Open Source Geospatial Data in Order to Model Restoration Strategies in the

Aftermath of a Large-Scale Disaster," *International Journal of Geospatial and Environmental Research* 2 (1/4): 1–19.

Poreddy, Bhanuchander, Corns, Steven, Long, Suzanna, and Soylemezoğlu, Ahmet. (2015) "Dynamic Mathematical Model Framework of Complex Utility and Logistics System Interactions using Object Oriented Approach for Forward Operating Bases," *Engineering Management Journal*. Submitted December 2014; Accepted September 2015. Invited article for special issue on Military Applications in EM; special issue editors: Suzanna Long, PhD and LTC. Elizabeth Schott, PhD.

Egbue, Ona, Long, Suzanna, Ng, Ean-Harn (2015) "Charge It! Translating Electric Vehicle Research Results to Engage 7th and 8th Grade Girls," *Journal of Science Education and Technology*, Accepted March 2015, Volume 24, Issue 5, Page 663–670. DOI: 10.1007/s10956-015-9555-7.

Bartel-Radic, Anne, Moos, Chris, and Long, Suzanna (2015) "Cross-Cultural Management Learning Through Innovative Pedagogy: An Exploratory Study Of Globally Distributed Student Teams," *Decision Sciences Journal of Innovative Education*, Vol 13, Issue 4, P539-562.

Ramachandran, Varun, Long, Suzanna, Shoberg, Tom, Corns, Steven M. and Carlo, Hector J. (2015) "Framework for Modeling Urban Socioeconomic Resilience Time in the Aftermath of an Extreme Event," *Natural Hazards Review*, dx.doi.org/10.1061/(ASCE)NH.1527-6996.0000184.

Ramachandran, Varun, Long, Suzanna, Shoberg, Tom, Corns, Steven M. and Carlo, Hector J. (2015) "Post-disaster Supply Chain Interdependent Critical Infrastructure System Restoration Modeling: A Review of Necessary Data,"

Data Sciences Journal,
Submitted June 2015,
Accepted November 2015.

CONFERENCE PUBLICATIONS WITH PRESENTATIONS (PEER REVIEWED)

Moradpour, Samareh, Wu, Shuang, Long, Suzanna, Leu, Ming C., Konur, Dincer, and Qin, Ruwen, "Use of Traffic Simulators to Determine Driver Response to Work Zone Configurations," Proceedings of the American Society for Engineering Management 2015 International Annual Conference S. Long, E-H. Ng, and A. Squires eds., Indianapolis, October 2015.

Perez-Lespier, Lizzette and Long, Suzanna "A Model for the Evaluation of Environmental Impact Indicators for a Sustainable Maritime Transportation System," Proceedings of the American Society for Engineering Management 2015 International Annual Conference S. Long, E-H. Ng, and A. Squires eds., Indianapolis, October 2015. Abstract Only.

Brennan, Cory and Long, Suzanna, "Economic Analysis of Residential Energy Storage for Time of Use Rate Cases," Proceedings of the 2015 Industrial and Systems Engineering Research Conference, S. Cetinkaya and J. K. Ryan, eds., Nashville, May 2015.

Perez-Lespier, Lizzette and Long, Suzanna, "A Systems

Thinking Approach to Post-Disaster Restoration of Maritime Transportation Systems," Proceedings of the 2015 Industrial and Systems Engineering Research Conference, S. Cetinkaya and J. K. Ryan, eds., Nashville, May 2015.

Farhangi, Hadi, Konur, Dincer, Long, Suzanna, Qin, Ruwen, and Harper, Jennifer, "A Bi-objective Railroad Tracks Inspection Planning Problem," Proceedings of the 2015 Industrial and Systems Engineering Research Conference, Nashville, May 2015.

KEYNOTE PRESENTATIONS

Long, Suzanna, "Transportation, Connectivity and Smart Communities," Missouri State Professional Engineers Annual Meeting. Jefferson City, Mo., March 25, 2015.

FUNDED RESEARCH

"GEARED: The MidAmerica Regional Microgrid Education and Training (MARMET) Consortium," Co-PI (27%) with Mariesa Crow (PI) and Jonathon Kimball, USDOE, Oct. 1, 2013–September 2017, \$4,300,000. Awarded.

"Work Zone Simulator Analysis: Driver Performance and Acceptance of Missouri Alternate Merge Sign Configurations," PI (30%) with Co-PIs Ming Leu, Dincer Konur and Ruwen Qin, MoDOT, Oct. 1, 2014–June 15, 2016, \$156,839. Awarded.

"Characteristics of a Scalable Microgrid Power System," PI (100%), Ameren Power Systems Consortium, Sept. 1, 2014–Aug. 31, 2015. \$25,000. Awarded.

"Track Inspection Planning and Risk Management Analysis," Co-PI (25%) with Dincer Konur (PI), Ruwen Qin, and A. Curt Elmore, MoDOT/MATC, Aug. 2013–Dec. 2014, Extension: Feb. 28, 2015, \$88,982. Awarded.

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," PI (70% Year 1; 60% Year 2; 60% Year 3) with Steven Corns, Co-PI, USGS, February 2013–February 2016, \$270,000. Awarded.

INTERNATIONAL SERVICE

ASEM International Academic Conference, Program Chair, 2013–2016.

Epsilon Mu Eta, Ad Hoc Board Member, 2008–2012; Secretary, 2012–2015, President, 2015–2017.

Institute of Industrial Engineers, Society of Engineering Management, President, 2015.

NATIONAL SERVICE

Engineering Management Journal, Special Issue Editor, 2011–2012; 2014–2016.

Decision Sciences Journal for Innovative Teaching, reviewer, 2010–present.

Energy Policy Journal, reviewer, 2013–present.

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DONALD D. MYERS SCHOLARSHIP AWARDED

Mason Lee Donnell, a sophomore in chemical engineering, has been awarded the Donald D. Myers Scholarship in recognition of his extraordinary service to the community and the campus.

The Willard, Missouri, native received the award for the 2015–16 academic year during Missouri S&T's 12th annual student leaders' banquet at the Havener Center in April.

"Mason was selected because of the meaningful impact he has made through his service, his ability to lead and inspire others, and his continued commitment to serve," says Tina Reagan, student services advisor in student life at Missouri S&T.

Donnell is heavily involved on campus, but maintains a high GPA, Reagan says. During his senior year in high school, he established a school science club in his small home town to promote and encourage youth to pursue an education in STEM fields. He also mentors S&T students to make sure they have the support needed to succeed and grow.

The scholarship is named for Dr. Donald D. Myers, who was a professor of engineering management at Missouri S&T for more than 30 years. Established in 2009 by his family with the generous contributions of his many friends, the scholarship is an annual tribute to his extraordinary life of service.

The purpose of the scholarship is to recognize and support Missouri S&T students who have made a significant contribution to the community or campus through their service.



◀ ZEYI SUN

Dr. **Zeyi Sun** joined the EMSE faculty in August 2015. Sun earned his Ph.D. from the University of Chicago in May 2015. His research areas include energy efficiency management of manufacturing systems, electricity demand response of manufacturing systems, system modeling of cellulosic biofuel manufacturing, energy modeling and control in additive manufacturing, and intelligent maintenance of manufacturing systems.

AND THE AWARD GOES TO ...

Bea Bonebrake

- 2015 Outstanding Staff Award.

Dr. Elizabeth Cudney

- Academician, International Academy for Quality — Elected in April 2015
- 2015 ASEM World Headquarters Service Commendation Award
- Chair-Elect for the ASEM Fellows for 2015–2016
- Chair of the Fellows then from 2016–2017.

Dr. Ivan Guardiola

- Bernard Sarchet Award, Epsilon Mu Eta National Engineering Management Honor Society, Outstanding Achievements in Engineering Management, 2015
- Edward Smith Faculty Award, Stipend: \$1,800, 2015
- Missouri S&T, Student Life, Advisor of the Year Award, 2015.

Dr. Suzanna Long

- 2015, ASEM Fellow, International Honor
- 2015, ASEM Franklin Woodbury Award, International Honor
- 2015, ASEM World Headquarters Service Commendation Award, International Honor.

Dr. Ruwen Qin

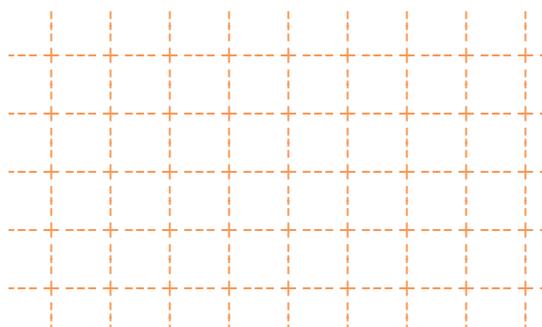
- 2015 Outstanding Graduate Faculty Award
- Edward Smith Faculty Award, Department of Engineering Management and Systems Engineering, Missouri S&T, 2015
- Outstanding Professor Award, Department of Engineering Management and Systems Engineering, Missouri S&T, 2015.

Dr. Stephen Raper

- 2015 Outstanding Undergraduate Faculty Award.

Karen G. Swope

- 10 year service award, Missouri S&T.



Engineering Management Journal, associate editor, August 2013–present.

Engineering Management Journal, reviewer, 2009–present.

UNIVERSITY OF MISSOURI SYSTEM SERVICE

UM System Presidents Award Committee, 2014–2015.

Innovative Teaching, Intercampus Collaboration, Student Entrepreneur of the Year, committee member, 2014; committee chair, 2015.

Faculty Engagement, Thomas Jefferson and Economic Development, committee member, 2015.

MISSOURI S&T CAMPUS SERVICE

Task Force on Selection of Vice Provost and Dean Policy, 2015.

Budgetary Affairs Committee, 2014–2016.

Graduate Faculty Council, secretary, 2014–2015.

Student Scholastic Appeals Committee, 2014–2016.

DEPARTMENT SERVICE

Executive Committee, chair, 2015–

Emergency Management Committee, chair, 2015–

Graduate Committee, chair, 2013–2015

DR. RUWEN QIN

GRANTS

Interdisciplinary GAANN program in electrical engineering and engineering management for smart grid technology. U.S. Department of Education. \$738,195 total funding, \$110,729 (15%) shared credit. September 2015–August 2018. Co-PI with M. Ferdowsi (PI), D. Wunsch, M. Zawodniok and P. Shamsi.

Work zone simulator analysis: Driver performance and acceptance of alternate merge sign configurations. Missouri Department of Transportation with match from Mid-America Transportation Center. \$156,839 total funding, \$39,210 (25%) shared credit. October 2014–June 2016. Co-PI with S. Long (PI), D. Konur and M. Leu.

PUBLICATIONS

Cudney, E.A., R. Qin, Z. Hamzic, 2015. "Development of an optimization model to determine sampling levels." *International Journal of Quality & Reliability Management*. Accepted.

Qin, R., E.A. Cudney, Z. Hamzic, 2015. "An optimal plan of zero-defect single-sampling by attributes for incoming inspections in assembly lines." *European Journal of Operational Research* 246(3): 907–915.

Qin, R., D.A. Nembhard., W.L. Barnes, 2015. "Workforce flexibility in operations management." *Surveys in Operations Research and Management Science* 20(1): 19–33.

Deng, T., R. Chen, S. Huang, R. Qin, 2015. "Optimal crude oil procurement under fluctuating price in an oil refinery." *European Journal of Operational Research* 245(2): 438–445.

Al sharif, A.A.A., R. Qin, 2015. "Double-sided price adjustment flexibility with a pre-emptive right to exercise." *Annals of Operations Research* 266(1): 29–50.

DR. ZEYI SUN

JOURNAL PAPERS

Z. Sun, L. Li, A. Bego, and F. Dababneh, 2015. "Customer-side electricity load management for sustainable manufacturing systems utilizing combined

heat and power generation system," *International Journal of Production Economics*, 165:112–119.

CONFERENCE PUBLICATIONS

Z. Sun, D. Wei, L. Wang, and L. Li, "Data-Driven Production Runtime Energy Control of Manufacturing Systems towards Sustainability," in Proceedings of 2015 IEEE Conference on Automation Science and Engineering (CASE), Gothenburg, Sweden.

Z. Sun, D. Wei, L. Wang, and L. Li, "Energy-Integrated Production Scheduling in Industrial Energy Management System," in Proceedings of 2015 IEEE Conference on Automation Science and Engineering (CASE), Gothenburg, Sweden.

F. Dababneh, M. Atanasov, Z. Sun, and L. Li, "Simulation-Based Electricity Demand Response for Combined Manufacturing and HVAC System towards Sustainability," in Proceedings of ASME 2015 Manufacturing Science and Engineering Conference (MSEC), June 8–12, 2015, Charlotte, North Carolina.

X. Yao, Z. Sun, and L. Li, "Joint Maintenance and Energy Management of Sustainable Manufacturing Systems," in Proceedings of ASME 2015 Manufacturing Science and Engineering Conference (MSEC), June 8–12, 2015, Charlotte, North Carolina. □



CHILI COOK-OFF A SUCCESS

The EMSE department held its annual Chili Cook-Off on Friday, Oct. 30, 2015, to raise money for G.R.A.C.E. (Greater Rolla Area Charitable Enterprise).

The chili winners are:

- Non-Traditional — Dr. Beth Cudney
- Traditional — Stan Busch

The chili judges were:

- Lisa Strauser, senior student support specialist, distance and continuing education
- Sharon Matson, lead graduate specialist, office of graduate studies
- Jesse Singleton, manager, printing and mail services.

The department raised a total of \$365 this year.

The Halloween Costume Contest winners are Violet Kouzes and Brianna DeGroot (the Grinch and Cindy Lou Who), both students in EMSE.





Engineering Management and
Systems Engineering
223 Engineering Management Building
600 W. 14th Street
Rolla, MO 65409



GRADUATION DOESN'T MEAN GOODBYE.

Tell us how you're doing. We'd love to hear about new appointments, degrees earned, job promotions and other life events.

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