INDUSTRIAL ENGINEERING

STATE OF THE DEPARTMENT

UNIVERSITY OF ARKANSAS

DEPARTMENT **VISION**

To be a nationally-competitive, student-centered, Industrial Engineering program serving Arkansas and the world through undergraduate and graduate studies, through leading-edge research programs, through contributions to the profession, and through our unique access to major organizations with world-class logistics and distribution operations. To be a model program providing a broad, personalized undergraduate experience, contemporary graduate and professional programs, and research emphasizing the application of quantitative modeling and analysis. To be leaders in the industrial engineering profession.

Table of Contents

WELCOME

Dear Alumni and Friends of UA-IE,

As we begin a new academic year it is important to evaluate the department's progress and review the accomplishments of the past year. We are pleased to note the many outstanding achievements of our students, alumni, faculty and staff in this report.

As a department we are excited about the growth not only in our student population, but also in the increased opportunities that are available to them through global academic and research experiences. During the past academic year we had an opportunity through Walmart International to establish the Global Internship/Cooperative Program. Also in partnership with Walmart, a team of industrial engineering students traveled to Mexico City as part of our first international senior design project. These are the newest efforts toward giving our graduates a competitive edge in the job market. The John L. Imhoff Global Studies Endowment allows us to provide study abroad opportunities to several undergraduate students each year. Coupled with the programs sponsored at the college and university level we are able to significantly increase the percentage of students graduating with a global experience.

Student and faculty recognitions continue to bring visibility for our program. We are especially pleased to report that Assistant Professor Kelly Sullivan was selected for the Glover-Klingman Prize for his paper "Exact algorithms for solving a Euclidean maximum flow network interdiction problem" published in the journal Networks. Dr. Kim LaScola Needy was named a Fellow by the American Society for Engineering Education, Dr. Greg Parnell was awarded the Ramsey Medal from the INFORMS Decision Analysis Society and Dr. Heather Nachtmann was selected as the new Associate Dean of Research for the College of Engineering.

We hope you enjoy learning more about the department activities and successes as you review this publication.

Sincerely,

Edward A. Pohl, Ph.D.
Department Head and
21st Century Professor of Industrial Engineering

C. Richard Cassady, Ph.D.
Professor

Dr. Cassady serves as Director of Freshman Engineering for the College of Engineering. His primary research interests lie in repairable systems modeling. He also conducts research in the areas of reliability engineering, statistical quality control, and sports applications of operations research. Dr. Cassady teaches courses in reliability and maintainability engineering, operations research, probability and statistics, and statistical quality control. He joined the faculty in 2000.

Education:
Ph.D. Industrial and Systems Engineering (Virginia Tech)
M.S. Industrial and Systems Engineering (Virginia Tech)
B.S. Industrial and Systems Engineering (Virginia Tech)

Justin R. Chimka, Ph.D.
Associate Professor

Dr. Chimka serves as the Graduate Program Studies Chair. His research interests include categorical data analysis, inventory control, statistical quality control, survival analysis, and time series. He teaches courses in applied statistics, generalized linear models, optimization, and production. Dr. Chimka joined the faculty in 2002.

Education:
Ph.D. Industrial Engineering (University of Pittsburgh)
M.S. Industrial Engineering (University of Pittsburgh)
B.S. Industrial Engineering (University of Pittsburgh)

John R. English, Ph.D, PE
Professor, Dean & Irma F. and Raymond F. Giffels Endowed Chair in Engineering

Dr. John English serves as Dean of Engineering at the University of Arkansas. He is active in research focusing on quality and reliability engineering. He has published numerous articles and book chapters in the field of logistics and material handling. His awards include the Halliburton Research Award, the Dr. Theo Williamson Award from *Integrated Manufacturing Systems* and the Continuing Professional Development Best Paper award from the American Society for Engineering Education. He is a fellow of the Institute of Industrial Engineers. Dr. English returned to the college in 2013.

Education:
Ph.D. Industrial Engineering and Management (Oklahoma State University)
M.S. Operations Research (University of Arkansas)
B.S. Electrial Engineering (University of Arkansas)

Carol S. Gattis, Ph.D.
Adjunct Associate Professor

Dr. Gattis has been responsible for undergraduate student recruitment and taught courses in statistics, work methods and measurement, and engineering economics. She currently serves as the Associate Dean of the Honors College. Dr. Gattis joined the faculty in 1991.

Education:
Ph.D. Engineering (University of Arkansas)
M.S. Electrial Engineering (University of Arkansas)
B.S. Electrial Engineering (University of Arkansas)

Haitao Liao, Ph.D.
Professor, James M. Hefley and Marie G. Hefley Professor in Logistics and Entreprenuership

Dr. Liao's research interests include reliability models, maintenance and service logistics, prognostics, data analytics, and probabilistic risk assessment. In his research, he focuses on reliability engineering, applied probability and statistics, applied operations research, probabilistic risk analysis, and sensors and signal processing. He joined the faculty in 2015.

Education:
Ph.D. Industrial and Systems Engineering (Rutgers University)
M.S. Industrial and Systems Engineering (Rutgers University)
M.S. Statistics (Rutgers University)
B.S. Electrical Engineering (Beijing Institute of Technology)

Ashlea Bennett Milburn, Ph.D.
Assistant Professor

Dr. Milburn's research interests include applying operations research tools and techniques to problems encountered in healthcare and transportation systems. She is especially motivated by the modeling and analysis of challenges associated with the delivery of home healthcare. Dr. Milburn teaches courses in probability and statistics, healthcare systems, and transportation logistics. She joined the faculty in 2010.

Education:
Ph.D. Industrial and Systems Engineering (Georgia Tech)
M.S. Industrial and Systems Engineering (Virginia Tech)
B.S. Industrial Engineering (University of Arkansas)

Heather Nachtmann, Ph.D.
Professor and Associate Dean of Research, College of Engineering

Dr. Nachtmann serves as the Director of the Maritime Transportation Research and Transportation Center and the Mack-Blackwell Transportation Center. Her current research program focuses on economic and decision analysis of transportation systems focusing on inland waterways and rural transportation networks, cost and quality issues in the healthcare supply chain, and advanced methods for engineering economic analysis. Dr. Nachtmann teaches in the areas of engineering economy, cost analysis, and decision modeling. She joined the faculty in 2000.

Education:
Ph.D. Industrial Engineering (University of Pittsburgh)
M.S. Industrial Engineering (University of Pittsburgh)
B.S. Industrial Engineering (University of Pittsburgh)

Kim LaScola Needy, Ph.D., PE, CFPIM, PEM
Professor & Dean, Graduate School and International Education

Dr. Needy's research interests include engineering management, engineering economic analysis, sustainable engineering, and integrated resource management. She has taught courses in project management and IE design. Dr. Needy joined the faculty in 2008.

Education:
Ph.D. Industrial Engineering (Wichita State University)
M.S. Industrial Engineering (University of Pittsburgh)
B.S. Industrial Engineering (University of Pittsburgh)

Sarah Nurre, Ph.D.
Assistant Professor

Dr. Nurre's current research interests are in applying network optimization, scheduling, integer programming, and optimization algorithms to relevant applications such as infrastructure restoration, multi-layer interdependent network protection, vehicle routing for the military and public sector, and the integration of electric vehicles with a smart grid. She joined the faculty in 2015.

Education:
Ph.D. Decision Sciences and Engineering Systems (Rensselaer Polytechnic Institute)
M.E. Industrial and Management Engineering (Rensselaer Polytechnic Institute)
B.S. Mathematics (Rensselaer Polytechnic Institute)

Gregory S. Parnell, Ph.D.
Research Professor of Industrial Engineering and Director of the M.S. in Operations Management

Dr. Parnell's research interests include decision analysis, systems engineering and resource allocation in the areas of defense, national security, homeland security, and R&D planning. He teaches courses in decision models, systems engineering, project management, operations management and industrial engineeing design. He joined the faculty in 2013.

Education:
Ph.D. Engineering-Economic Systems (Stanford University)
M.S. Systems Management (University of Southern California)
M.E. Industrial & Systems Engineering (University of Florida)
B.S. Aerospace Engineering (State University of New York at Buffalo)

Harry A. Pierson, Ph.D.
Assistant Professor

Dr. Pierson's research interests include collaborative robotics and agile automation. Applications include distribution center operations and low-volume, high-mix manufacturing environments. Additionally, he conducts research in additive manufacturing (commonly referred to as 3D printing). Dr. Pierson teaches courses in applied robotics and manufacturing processes. He joined the faculty in 2014.

Education:
Ph.D. Industrial and Systems Engineering (The Ohio State University)
M.S. Engineering Management - Manufacturing Engineering (University of Missouri-Rolla)
B.S. Mechanical Engineering (University of Missouri-Rolla)

Edward A. Pohl, Ph.D.
Professor, Department Head & 21st Century Professor of Industrial Engineering

Dr. Pohl's research interests include repairable systems, large-scale systems engineering and analysis, probabilistic design, risk and reliability, and engineering optimization. He teaches courses in quality control, engineering statistics, non-linear programming, heuristics, risk modeling, systems engineering and management. Dr. Pohl joined the faculty in 2004.

Education:
Ph.D. Systems and Industrial Engineering (University of Arizona)
M.S. Reliability Engineering (University of Arizona)
M.S. Engineering Management (University of Dayton)
M.S. Systems Engineering (Air Force Institute of Technology)
B.S. Electrical Engineering (Boston University)

Letitia Pohl Ph.D.
Clinical Assistant Professor

Dr. Pohl serves as the undergraduate academic advisor. Her interests include facility logistics, transportation security and engineering education. Dr. Pohl teaches courses in engineering economic analysis, operations management, and human factors/ergonomics. She joined the faculty in 2012.

Education:
Ph.D. Industrial Engineering (University of Arkansas)
M.S. Systems Engineering (Air Force Institute of Technology)
B.S. Mechanical Engineering (Tulane University)

Chase Rainwater, Ph.D.
Associate Professor, John L. Imhoff Chair in Industrial Engineering

Dr. Rainwater's research interests lie in the areas of large-scale optimization, integer programming and supply chain logistics. In addition, he conducts research in areas of healthcare planning, homeland security, and reliability. Dr. Rainwater teaches courses in probability and statistics, optimization and decision support systems. He joined the faculty in 2009.

Education:
Ph.D. Industrial and Systems Engineering (University of Florida)
B.S. Industrial Engineering (University of Arkansas)

Ronald L. Rardin, Ph.D.
Distinguished Professor Emeritus

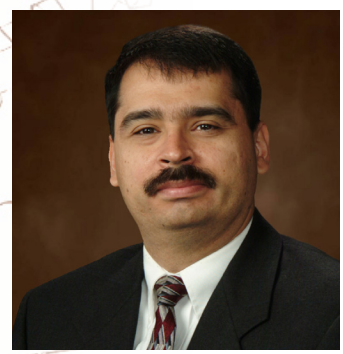
Dr. Rardin officially retired in 2013, but remains active teaching for our distance education programs. His research and teaching interests center on large-scale optimization modeling and algorithms, including their application in healthcare delivery, transportation and logistics, and energy planning.

Education:
Ph.D. Industrial and Systems Engineering (Georgia Institute of Technology)
M.P.A. Municipal Administration (University of Kansas)
B.A. Mathematics/Political Science (University of Kansas)

Sarah E. Root, Ph.D.
Clinical Assistant Professor

Dr. Root's interests include defining, modeling, and solving applied large-scale optimization problems. She is particularly interested in the application of optimization tools to problems encountered in healthcare and logistics. She teaches courses in operations research and service systems engineering. Dr. Root joined the faculty in 2007.

Education:
Ph.D. Industrial Engineering (University of Michigan)
B.S. Industrial Engineering (University of Pittsburgh)



Manuel D. Rossetti, Ph.D., PE
Professor and Associate Department Head

Dr. Rossetti's research is focused on the design, analysis and optimization of transportation, inventory, healthcare and manufacturing systems, using stochastic modeling, computer simulation, information systems, and heuristic modeling techniques. He teaches courses in the areas of probability modeling, discrete event simulation, object-oriented and database systems, transportation/logistics modeling, and inventory modeling. He serves as the Director of the Center for Excellence in Logistics and Distribution (CELDi) Dr. Rossetti joined the faculty in 1999.

Education:
Ph.D. Industrial and Systems Engineering (The Ohio State University)
M.S. Industrial and Systems Engineering (The Ohio State University)
B.S. Industrial Engineering (University of Cincinnati)

Kelly Sullivan, Ph.D.
Assistant Professor

Dr. Sullivan's research focuses on developing and applying operations research methodology to design systems that are resilient against disruption. His primary research interests lie in the areas of integer programming, network optimization, and reliability. Dr. Sullivan teaches courses in probability and statistics, operations research, and network optimization. He joined the faculty in 2012.

Education:
Ph.D. Industrial and Systems Engineering (University of Florida)
B.S. Industrial Engineering (University of Arkansas)

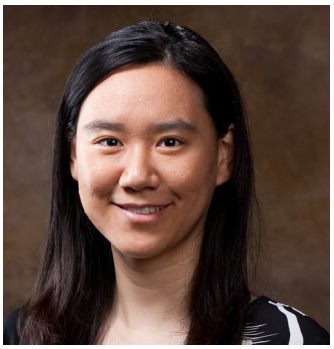
John A. White, Ph.D., PE
Distinguished Professor & Chancellor Emeritus

After serving for eleven years as Chancellor of the University of Arkansas, Dr. White joined the faculty of the Department of Industrial Engineering full-time in 2009. A distinguished alumnus of the department, Dr. White teaches engineering economics, facilities planning, and queueing systems.

Education:
Ph.D. (The Ohio State University)
M.S. Industrial Systems Engineering (Virginia Tech)
B.S. Industrial Engineering (University of Arkansas)

Dr. White also holds honorary doctorates from the Katholieke Universitiet of Leuven in Belgium and George Washington University.

Shengfan Zhang, Ph.D.
Assistant Professor



Dr. Zhang's research interests are mathematical modeling of stochastic systems with an emphasis on statistical and decision analysis as applied to health care, manufacturing, and service environments. One of her research goals is to develop methods for addressing the complexity of breast cancer modeling in diverse populations in order to create more personalized screening and treatment strategies. Dr. Zhang teaches courses in advanced stochastic processes, decision modeling in health care, and quality engineering and management. She joined the faculty in 2011.

Education:
Ph.D. Industrial Engineering (North Carolina State University)
M.I.E. Industrial Engineering (North Carolina State University)
B.M. Management Science (Fudan University)

In the academic year 2014-2015 the department named a new department head, saw impressive growth in the program, maintained a steady research focus, and welcomed new faculty members.

After serving for several months as interim, Dr. Ed Pohl was named department head and holder of the 21st Professorship in the Department of Industrial Engineering at the University of Arkansas. Prior to his appointment as department head, he served as the Director of the Operations Management Program. He currently serves as Director of the Center for Innovation in Healthcare Logistics (CIHL) and the Director of Distance Education in the College of Engineering.

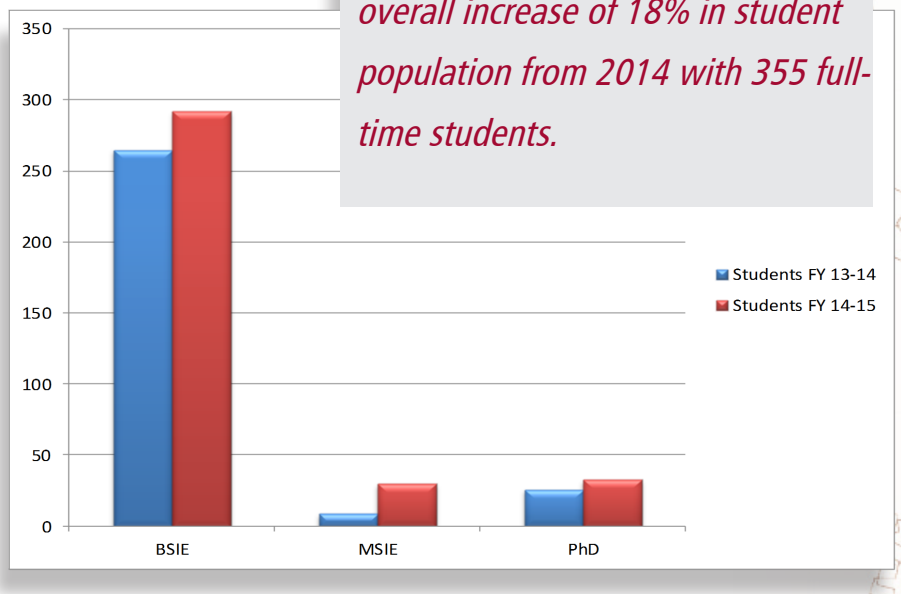
The program experienced an overall increase of 18% in student population from 2014 with 355 full-time students (BSIE 292, MSIE 30, PhD 33). The largest growth was realized among our BSIE students at 23% above the previous year. The department remains active in research providing research opportunities for more than 40% of our undergraduate and graduate students.

Our Master of Science in Operations Management Program (MSOM), which is a professional practice degree that is delivered primarily through 'distance learning' mode, had 862 unique students enrolled in the program for the 2014-2015 academic year and a total of 3375 course enrollments for the year.

The department added two faculty members in the fall 2015. Our newest assistant professor is Dr. Sarah Nurre. She received a doctorate in decision sciences and engineering systems, a MS in industrial and management engineering and a BS in mathematics, all from Rensselaer Polytechnic Institute.

Dr. Haitao Liao was selected as the James M. and Marie G. Hefley Professor of Logistics and Entrepreneurship. Dr. Liao received a MS and PhD in industrial and systems engineering, as well as a MS in statistics from Rutgers University. He earned a BS in electrical engineering at the Beijing Institute of Technology.

The program experienced an overall increase of 18% in student population from 2014 with 355 full-time students.



UNDERGRADUATE PROGRAM OVERVIEW

The objectives of the undergraduate program in the Department of Industrial Engineering at the University of Arkansas are to produce graduates who, within just a few years of graduation, can: (1) successfully apply core industrial engineering knowledge and skills for industrial or public sector organizations, (2) successfully pursue advanced professional degrees, graduate studies in industrial engineering, professional training, or engineering certification, and (3) demonstrate professional and intellectual growth as managers and leaders in industrial engineering, society, and their communities. Our curriculum includes not only industrial engineering courses, but also courses in engineering science, computer science, mathematics, physical science, english, economics and other socials sciences, the humanities, and the fine arts. Dr. Richard Cassady, Professor of Industrial Engineering, serves as the Chair of Undergraduate Studies. More information on the undergraduate program can be found at http://industrial-engineering.uark.edu/academics/undergraduate-program/index.php.

Students enter our program as sophomores, since all first-year College of Engineering students participate in the Freshman Engineering Program. Directed by Dr. Richard Cassady, the Freshman Engineering Program includes two semesters of academic coursework, peer mentoring, professional development, academic advising, and academic assistance programs. Since the Freshman Engineering Program was implemented in 2007, second-year retention (in engineering) of first-year engineering students has increased from approximately 60% to approximately 70%. Roughly 13% of retained Freshman Engineering Program students choose industrial engineering for their sophomore year.

First-ever International Capstone Project

During the Spring 2015 semester, four students from the University of Arkansas' Industrial Engineering Department were pioneers in a first-ever international industrial engineering design project, working with Walmart de México y Centroamérica (Walmex) in Mexico City. In collaboration with Walmart's International Division, students Adam Klausing, Kelsey Kraynik, Lucas Ivanovic, and Stephanie Bakewell had the opportunity to travel to Mexico City and work closely with home office and store associates to help solve a real business problem. The students had an opportunity to gain unique international experience in

conjunction with their coursework. "Our senior design project with Walmart International and Walmex went above and beyond our expectations as it provided a firsthand experience of the skills needed to be successful in a global enterprise," said Adam Klausing, student and project manager.

Industrial Engineering Design is the capstone design course for undergraduate students majoring in industrial engineering. The purpose of a capstone design course is to give senior engineering students the opportunity to apply knowledge learned throughout their college education to a significant project. The project scope was to help continue to define and refine routines and standard operating procedures for store associate roles in Sam's Club stores in Mexico while making recommendations for process enhancements. By leveraging their knowledge and learning, they gained insight into the international operations of the world's largest retailer and simultaneously delivered value to the organization. The standard operating procedures will be available to store employees for training and use on the job.

International experiences are invaluable and are becoming increasingly important to employers and universities across the country. Departments such as Industrial Engineering (IE) have created an internal objective of providing 25 percent of all IE students with global studies experience. One way in which the IE department at University of Arkansas is working to meet this objective is by expanding its international offerings. Through relationships with companies such as Walmart, students are now able to gain global experience through internships, co-ops, and, most recently, international senior design projects.

The students created a video to share their incredible experience in Mexico and the content is available on the Arkansas Academy of Industrial Engineering (AAIE) website. The video includes a short introduction on the project followed by a picture slideshow. For more information on the AAIE, please visit the main page at https://aaie.uark.edu/.

Adam Klausing, Stephanie Bakewell, Kelsey Kraynik, Lucas Ivanovic, and Daysi Garcia with the México y Centroamérica team.

The Global Experience

Our program also includes opportunities for study abroad, cooperative education, and honors experience. Administered by the Office of Study Abroad and International Exchange, study abroad gives students the opportunity to earn credits toward their degree while being immersed in an international culture. Nineteen of our industrial engineering undergraduates participated in the study abroad program in six countries during the 2014-2015 academic year (Australia, Brazil, England, Italy, Mexico, and Panama).

Undergraduate, Kaitlyn Thomas in England

In our department, the John L. Imhoff Global Studies Endowment supports academic scholarships that help defray expenses incurred by industrial engineering students engaged in for-credit overseas study and/or an overseas internship or cooperative education experience. Nine of our industrial engineering undergraduates participated in this study abroad program in seven locations during the 2014-2015 academic year. (Australia, Belize, Copenhagen, England, Italy, Prague, and Spain).

Real-World Experience

Cooperative education provides interested students with opportunities to complement their engineering education with full or part-time, paid, degree-related work experience. The work experience provides participants with opportunities to apply what they have learned in the classroom and to interact with experienced industrial engineers. Participants also gain insights into the industrial engineering profession that help them define their educational and career goals. In 2014-2015, students from our department participated in cooperative work experiences at Amsted Rail - Faiveley, LLC, ArcBest Corporation, Ayrshire Electronics, BJC Healthcare, Central States Manufacturing, Inc., Eaton's Cooper Power System, Ethicon, Hewlett-Packard, J.B. Hunt, Johnson & Johnson Sales & Logistics Co., LLC, Nestle, ONEOK Partners, Oshkosh Corporation, Pinnacle Foods Group, LLC, Rheem, ServiceMaster, SIMTEC Silicone Parts, The Walt Disney Company, Transplace, Unilever, University of Arkansas, Valspar Corporation,

Walmart, and Westrock Group. Cooperative education is supported by the Career Development Center and Brian Henderson, Director of Employer Relations for the College of Engineering.

Student	Honors Thesis Title	Advisor
Valeria Remon Perez	Maritime Transportation Research Bank	Nachtmann
Kaitlin Denny	Sensitivity Analysis of Dredge Fleet Scheduling	Nachtmann
Joseph Schulze	A Mathematical Model for Two-Layer Networks with One-Way Dependency	Sullivan
Peiwen Duan	Hospital Discharge Decision Modeling for Mental Health Inpatients	Zhang
Kaitlyn Thomas	A Decision Support Tool for Appointment Scheduling to Reduce Patient No-Show Rate in an Outpatient Psychiatric Clinic	Zhang
Hayden Summerhill	Prioritizing Interdictions on a Shortest Path Network	Sullivan
Maria Luisa Janer Rubio	Simulation Analysis on Alternatives to Accelerate the Passenger Flow in Security Checkpoints	Rossetti

Honors Experience

The honors experience in our department is designed for students who are also enrolled in the University of Arkansas Honors College. The experience includes a minimum of 12 credit hours of honors courses, as well as an undergraduate research project that culminates with a thesis. In 2014-2015, seven undergraduate students completed the Honors College experience in our department.

Members of the class of 2014 were hired by nationally-recognized companies such as BNSF, Cameron, Cardinal Health, General Motors, Georgia Pacific, Hewlett-Packard, International Paper, INVISTA, Lockheed Martin, Sam's Club, Southwestern Energy and UPS. The average starting salary for BSIE graduates was approximately $60K (high was reported at $72K). A number of graduates chose to pursue graduate studies at the University of Arkansas and other prominent institutions.

Undergrad Highlights

- Annually, the Department honors industrial engineering students at the Awards Banquet. In April 2014, 45 IE students received various departmental and named scholarships. The total dollar value of these scholarships exceeded $89,000. The totals for April 2015 were 45 students receiving $92,500.
- The department continues to report successes within professional societies. In 2014, the Alpha Pi Mu student chapter (faculty advisor Dr. Ashlea Milburn) received the 3rd Place Outstanding Chapter Award from the executive council of the national organization. In 2014, our student chapter of the Institute of Industrial Engineers (faculty advisor Dr. Chase Rainwater) received the Frank F. Groseclose Silver Award.

Members of the class of 2014 were hired by...

- The College of Engineering recognized several students at its Student Awards and Honors Reception in April 2014.

  Twelve students were recognized as a First Ranked Senior Scholar for having achieved a 4.0 grade point average for coursework completed on this campus: industrial engineering students Katy Accurso, Christopher Bayles, and Hannah Corbitt were among those recognized.

  Five students received Porter Stone Coop Award, which is given to engineering students who have excelled in cooperative education: senior industrial engineering student Kelli Schlais was one of the five.

  Joseph Castrodale was the Outstanding Senior

  In April of 2015, Senior, Kaitlin Denny was named the IE Outstanding Senior.

- The Institute of Industrial Engineers Honors and Awards banquet was held June 2nd, 2014 during the Industrial and Systems Engineering Research Conference in Montreal, Quebec. Eleven U of A faculty members, one staff member and fourteen students attended the conference.

  Distinguised Professor, Dr. John White received the Best Track Paper Award from the Industrial and Systems Engineering Research Conference, along with industrial engineering undergraduate students, Jordan Sonnentag and Robert Imhoff and Tennessee Tech Faculty Member, Dr. Jessica Matson for their paper entitled *"An Analysis of Block Stacking with Lot Splitting."*

  In addition, the IIE Board of Trustees awarded several University of Arkansas students scholarships and fellowships. Kaitlin Denny was awarded the Harold and Inge Marcus Scholarship. Luisa Janer and Hannah Koehn received Dwight D. Garner Scholarships.

- In 2015 the Institute of Industrial Engineers held its annual conference May 30 to June 2nd, in Nashville, Tennessee. Undergraduate student, Ashleigh Hegwood, received the $2,000 CISE Scholarship for the 2015-2016 academic year.

- The UA chapter of the Society of Women Engineers (SWE) was selected to host the 2016 SWE Region C Conference.

  Undergraduate, Tyler Beneke will serve as the chapter president and will lead the event planning.

Distinguished Professor, Dr. John White and Senior, Jordan Sonnentag

GRADUATE PROGRAM OVERVIEW

Graduate course offerings of the Department, as well as research opportunities for Industrial Engineering graduate students, continue to grow and diversify. A sampling of our graduate students' published work, highlighted in this section, illustrates the range of research interests being pursued under the guidance of our faculty. Also featured in this section is our professional graduate program in Operations Management.

For students pursuing graduate studies in the field of industrial engineering, we offer several options with respect to degree, area of specialization, and full-time or part-time studies.

Graduate degrees for on-campus students are offered in two areas:

- Master of Science in Industrial Engineering (MSIE)
- Doctor of Philosophy in Engineering (PhD)

In addition to traditional degree options the Department offers a Master of Science in Operations Management (MSOM).

Our faculty's wide range of expertise provides opportunities for study in a variety of areas such as:

- Transportation, Logistics & Distribution
- Healthcare Systems Engineering
- Reliability, Maintainability & Quality Engineering
- Engineering Management
- Manufacturing & Automation

These areas continue to be supported by research centers and laboratories such as:

- Center for Excellence in Logistics and Distribution
- Mack Blackwell Rural Transportation Center
- Center for Innovation in Healthcare Logistics
- ReliaSoft Risk, Reliability and Maintainability Research Alliance

Dr. Justin Chimka serves as Graduate Coordinator for programs in Industrial Engineering. Dr. Greg Parnell serves as Director of the program in Operations Management. More information can be found at http://industrial-engineering.uark.edu/

Highlights

Enrollment growth in the department's graduate programs in Industrial Engineering increased by greater than 60% from 2008 to 2014. Fall 2014 PhD enrollment in Industrial Engineering was third largest in the College of Engineering, and our department had the greatest number of female PhD students in the College.

Our graduate students have gained national recognition through awards, honors, and publications.

- Maboubeh Madadi was among the finalists for the INFORMS Minority Issues Forum poster competition, in which she presented a project on breast

cancer overdiagnosis. Assistant professor Dr. Shengfan Zhang is Madadi's faculty advisor.

- Doctoral student Mina Hadianniasar, advised by Dr. Ashlea Milburn, entered a case titled "Growing Pains" which was selected as a finalist in the Case and Teaching Material Competition.
- Master's student, John Miller received the Electrification and Controls Manufacturers Association Honors Scholarship from the Materials Handling Education Foundation. The scholarship provided $2,500 to support Miller's graduate studies. He is advised by Professor and Dean, Dr. John English.

- Doctoral students Furkan Oztanriseven and Mehmet Serdar Kilinc received second place in the student paper competition for their paper titled "*Vendor and Investment Option Selection in the Apparel Industry*," at the American Society for Engineering Management conference in October 2014. The paper was based on a research project completed in Dr. Heather Nachtmann's class.
- At the Institute for Industrial Engineering South Central Region Conference in 2014, industrial engineering graduate student, Kelsey Lamb received second place in the technical writing contest, she is advised by Professor and Dean, Dr. Kim LaScola Needy.
- Recognitions received at the Institute of Industrial Engineers Honors and Awards banquet held in June 2015:

  An award for 2015 ISERC Best Track Paper Award for Facility Logistics to Graduate Student, Mahmut Tutam and Dr. John White for their paper: "*A Conventional Warehouse Design with Multiple Docks*."

  Graduate Student, Kunlei Lian, advised by Dr. Ashlea Milburn, received the $2,500 Gilbreth Memorial Fellowship.
- Emre Kirac and Mahboubeh Madadi received second place in the Interactive Sessions Competition at the annual conference of the Institute for Operations Research and Management Sciences.
  Kirac also received an NSF Travel Grant to travel to the Industrial and Systems Engineering Research Conference (ISERC).

M.S.O.M. PROGRAM OVERVIEW

The Master of Science in Operations Management graduate degree program continues to thrive. This applied management program for working professionals attracts managers and professionals in various business sectors, industries, military branches of service and government offices. In the 2014-2015 academic year, more than 850 students were enrolled in MSOM courses.

The program is offered at the University of Arkansas's flagship Fayetteville campus, at live Graduate Resident Centers, and via distance learning online. The program is hosted on three active duty bases including Little Rock Air Force Base at Jacksonville, Arkansas; Naval Support Activity Mid-South at Millington, Tennessee; and the Air Force Special Operations Hurlburt Field base at Fort Walton Beach, Florida. These sites and the option of online classes allow the program to reach a diverse student population among career fields and undergraduate majors.

The MSOM program offers students flexibility by operating in 8-week terms, remaining low cost, and having an online option for all program courses. This flexibility accommodates students employed full-time by Fortune 500 companies such as Walmart, Sam's Club, Tyson Foods, J.B. Hunt Transport, Fed Ex, Lockheed-Martin, and Pratt & Whitney. We are also proud to be affiliated with the military and have many current military members and veterans from all branches of service stationed at our host bases and throughout the world.

Operations Management coursework emphasizes practical knowledge in areas such as project management, economic decision-making, supply chain management, human behavior analysis, quality management, and operations research, as well as many other areas of importance to today's manager. Program content focuses squarely on the concepts, methods, and tools that are essential to the successful management of work processes, projects, and people in a wide spectrum of organizations. The curriculum has an Industrial Engineering perspective on the science of management and equips graduates to carry out their managerial responsibilities more efficiently and more effectively. Students are able to select from 29 graduate courses to make up the ten required to complete the degree.

The curriculum is presented by outstanding faculty members who are drawn from the University's IE Department and from businesses throughout the country. Six IE faculty members are actively involved and over 70 adjunct faculty members teach in the program. The program recruits business professionals who are academically qualified and have accrued extensive managerial industry experience in the specific subject that they teach. Additionally, in 2015, the program added the first full-time operations management instructors to assist with program administration as well as carry a full teaching load.

Students and staff at the 40th Anniversary Celebration

In 2014, the MSOM program increased admission and graduation requirements. For admission consideration, students who are not native speakers of English and who do not have a conferred master's degree from an accredited U.S. college or university must submit a 550 paper-based score or an 80 internet-based score on the Test of English as a Foreign Language (TOEFL). Before taking any graduate classes in the Operations Management program, such students must also demonstrate proficiency on one of the following test of written English: TOEFL IBT (26), ELPT (75) or GRE/GMAT (4.0). The MSOM program also aligned the graduation GPA requirement with the Industrial Engineering Department. The requirement was increased from the Graduate School requirement of 2.85 to the Industrial Engineering requirement of 3.0.

A strength of the program is the dedicated staff. The program's assistant director for faculty development, Emily Nichols, was selected as the University of Arkansas Staff Senate Employee of the Quarter for the 1st Quarter of 2014-2015. Emily holds a master's degree in Higher Education from the University of Arkansas.

Emily Nichols and Dr. Greg Parnell.

Another of the program's top performers is Jerra Hill. She received the Arkansas Academy of Industrial Engineering Support Staff Member of the Year Award for 2015. Jerra joined the Department in the spring of 2011 and serves as the fiscal support analyst for the MSOM program. She is credited for making significant improvements to processes related to student accounts and financial aid.

Jerra Hill

Another strength of the program is a core value of continuous improvement. The motto, "we practice what we teach" guides the program goal to always improve. In 2014-2015, the program began offering advanced project management and began development of updated courses in change management, homeland security systems and lean systems to meet both student and industry needs.

More information concerning the Operations Management Program can be found at http://operations-management.uark.edu.

The Industrial Engineering Department has three physical computer laboratories for student use. These are the Foust Lab (BELL 4127-4128), Stephens Lab (BELL 4134A), and a general access computer lab shared with Civil Engineering (BELL 4133). All are equipped with the latest hardware, software and specialized programs. Designated lab space is described in detail below.

David D. and Nancy J. Foust Computation Laboratory

The Foust Computation Laboratory is INEG's premier computing and teaching lab providing general computing access for all Industrial Engineering students and supports the computing needs associated with course work. Included in the lab are a project area with whiteboards to encourage student discussions, and a separate conference area with a large LCD TV, DVD and VCR. Occupying approximately 2,100 square feet, the computer lab area can accommodate 44 students. It also functions as a general PC lab outside of class hours.

The Industrial Engineering department is committed to providing the latest in computer technology, software capability, and technical expertise to enhance the educational experience for all students. The Foust Computation Lab is open 24 hours a day throughout the semester to all faculty, staff, and students enrolled in INEG classes.

Larry and Gwen Stephens Undergraduate Research Laboratory

The Larry and Gwen Stephens Undergraduate Research Lab provides state-of-the-art facilities including the latest computer hardware and software designed for industrial engineering projects.

The lab provides individual work space for up to 15 undergraduate students. To be eligible for a space in this lab, a student must be engaged in research with an Industrial Engineering faculty member.

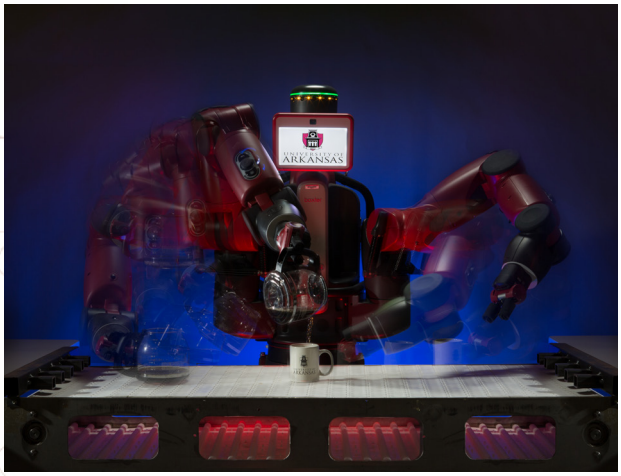
Manufacturing Automation Laboratory The AT&T Manufacturing Automation Laboratory

The Manufacturing Automation Lab allows students to gain hands-on experience with technologies that boost manufacturers' efficiency and agility. This includes both robotics and additive manufacturing.

The lab hosts two traditional robotic work cells. The vision-equipped Adept Cobra is a 4-axis SCARA geometry that is ideal for high-speed pick-and-place

operations, The other work cell features an Adept Viper 6-axis articulated arm mounted on a 2-axis Adept Python Cartesian robot. This is a common arrangement in industry for manufacturing tasks such as robotic welding and machine loading/unloading.

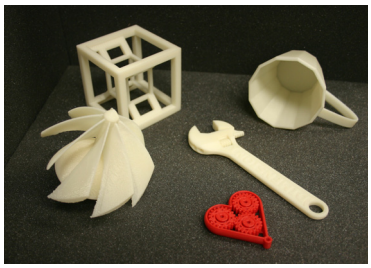
The lab also features a Baxter collaborative robot from Rethink Robotics. Baxter is intrinsically safe and possesses human-friendly task specification, allowing humans to work inside the work envelope and interact with the robot. With two seven-axis



arms, integrated machine vision, and an interactive display, Baxter can handle complex perception and manipulation tasks and represents the next generation of industrial robotics.

The Turtlebot mobile robot from Clearpath Robotics is the lab's fully autonomous robot that gives student experience with the simultaneous localization and mapping (SLAM) technologies used in both industrial mobile robotics and autonomous vehicles.

Additionally, the lab stays particularly active in the realm of Additive Manufacturing. The Stratasys uPrint is an industrial-grade fused deposition modeling (FDM) 3D printer. Further enhancing exposure to this type of manufacturing is the lab's MakerGear M2 desktop 3D printers, Simplify3D printing software, and Autodesk Inventor CAD software to provide low-cost, hands-on 3D printing experience for students.



The Bill and Margaret Harrison Family Video Conferencing Facility

An obsolete computing research laboratory in the College of Engineering has been transformed into the Bill and Margaret Harrison Family Video Conferencing Facility thanks to a contribution from alumni William and Margaret Harrison of Little Rock.

The space has been upgraded aesthetically by installing new carpeting and all new furnishings, but the paramount feature in the facility is the state-of-the-art software and equipment. The Bill and Margaret Harrison Family Video Conferencing Facility is equipped with the LifeSize 220 Express, described as the most full-featured video conferencing system available.

The system allows remote video and audio communication between up to eight parties

concurrently, and users can share content, control cameras, change layouts and add participants with ease. It includes an application for smart phones, tablets and computers and has the ability to record meetings and stream viewing.

Senior Design Lab

A dedicated space for students in the capstone course INEG 4904 was developed during the Fall 2013 term to be used primarily for students in Industrial Engineering Senior Design. It is equipped with a conference area, mobile media cart with a 60" television monitor and computer. This enables students to make presentations to industry partners.

Multi-purpose Teaching Lab

This lab supports two undergraduate courses, INEG 3713 Methods and Standards and INEG 4723 Ergonomics. The space is used to the hold lab meetings for these two courses where students

conduct experiments related to cognitive ergonomic concepts, hand tool design, anthropometric measurement, time studies, work sampling, and worksite analysis and design.

ReliaSoft Alliance Laboratory

ReliaSoft Corporation donated software to the University of Arkansas to form and support the ReliaSoft Risk, Reliability, and Maintainability Research Alliance. The software provides engineering students with state of the art tools to help identify potential risks and calculate the severity of disruptions within a manufacturing or transportation environment.

Competitively funded in September 2013 through Map-21, the University of Arkansas was awarded a $1.4 million Tier 1 University Transportation Center entitled the Maritime Transportation Research & Education Center (MarTREC) that focuses on building economic competitiveness through efficient, resilient, and sustainable maritime and multimodal transportation systems. Associate Dean Heather Nachtmann serves as the MarTREC center director. In May 2014, the grant received an additional $1.4 million in funding from the U.S. Department of Transportation. MarTREC's vision is to be recognized as the Nation's premier source for expertise on maritime and multimodal transportation research and education. Below are three ongoing projects led by industrial engineering faculty at the University of Arkansas:

Optimal Dredge Fleet Scheduling within Environmental Work Windows

Conducted with Dr. Rainwater, the goal of this research is to offer a robust decision tool that can be used by U.S. Army Corps of Engineers (USACE) to determine the appropriate dredge fleet and the optimal operations associated with that fleet for a given set of jobs. Our initial work with the USACE has shown that a systems optimization approach to dredge fleet scheduling can provide decision makers with quantitative insights into dredging program efficiency gains that could be realized system-wide if environmental restrictions were relaxed. Opportunities exist to provide decision-makers with quantitative insights into how efficiencies might be obtained if targeted research were to show that particular restricted periods could be relaxed without adverse consequences for sensitive and endangered species.

Economic Impacts of Lock Usage and Unavailability

Directed by Dr. Chimka, the research objective is to estimate annual tons locked by commodity group and lock, as a function of lock usage and unavailability (1993-2013). Usage data include average delay and processing time, barges empty and loaded, flotillas and vessels, lockages, and percent vessels delayed. Unavailability data include scheduled and unscheduled lock unavailabilities, and unavailable times. Estimation will require consolidation and statistical models of Lock Use, Performance, and Characteristics published by the U.S. Army Corps of Engineers Navigation Data Center. Results will include effects of lock usage and unavailability on tons locked by commodity group (coal, petroleum, chemicals, crude materials, primary manufactured goods, food, manufactured equipment, and waste material).

Supporting Secure and Resilient Inland Waterways

Overseen by Dr. Nachtmann, the overall research objective is to provide timely knowledge and awareness of what cargo should be prioritized for offloading during disruption response and what infrastructure exhibits low resiliency in terms of modal capacity to potential attacks or natural disasters against inland waterway transportation systems. Ongoing work has developed a systematic literature review of cargo prioritization methods and factors and an optimization approach to cargo prioritization and terminal allocation problem to provide decision support for disruption response stakeholders in order to minimize the total value loss of cargo disruptions on the inland waterways.

More information concerning MarTREC can be found at http://martrec.uark.edu/

Beginning in 2013, Dr. Manuel Rossetti, Dr. Ed Pohl, and Dr. Shengfan Zhang began working with a major medical device manufacturer to assist the company in understanding how their CRP (continuous replenishment planning) model compares to best-in-class VMI (vendor managed inventory) or demand-driven solutions and business processes.

The manufacturer is a global healthcare products provider, committed to innovative medical solutions, improved world health, and delivering value through healthcare leadership and excellence. As such they have used CRP with key distributors for decades and have evolved the process to include "fair share" processes that handle short stock situations and load building capabilities to maximize cube utilization of truck load shipments. They desired to collaborate with CELDi to gain the ability of selecting a good partner for a VMI relationship based on the achievable savings for both parties. Furthermore, they aimed at using this ability as a marketing tool to encourage their customers to commit in CRP partnering to gain the mutual benefits.

A continuous replenishment program (CRP) is a supply chain initiative in which the manufacturer manages the replenishment process using the shared demand information provided by the customer. The benefits include but are not limited to higher service level, lower transportation, holding, and ordering cost.

The focus of the project was to quantify the selection process from the perspective of manufacturer who faces a set of customers. Several factors such as volume, customer location, requested product mix and desired service level are considered as the inputs of this selection process. The main criterion of partner selection is total cost savings in the entire supply chain. The CELDi research resulted in an Excel-based decision support tool. This tool has the ability to estimate the total cost saving, manufacturer savings or customer savings, and compute a transportation performance metric when provided with inputs based upon historical data. The tool enables a manufacturer to predict the possible cost savings of a particular CRP relationship by performing sensitivity analysis on key characteristics of a customer such as demand volume

and transportation efficiency performance. The tool has been applied to analyze two potential CRP partners indicating substantial savings for both organizations in the relationship. Covidien is now using the tool as part of their CRP analysis process.

CELDi is a multi-university center with 5 academic partners. It is in its 13th year of support from member organizations (15) and the National Science Foundation (NSF).

Professor and Department Head, Dr. Ed Pohl was awarded Diplomate status in the Society of Health Systems in May of 2015. Diplomate status is awarded to recognize members for their contributions to the Society and to the healthcare industry.

The department is also home to The Center for Innovation in Healthcare Logistics (CIHL), which is currently led by Dr. Ed Pohl.

CIHL continues to conduct applied research projects that focus on reducing cost and increasing the efficiency in the delivery of healthcare. During the last year, CIHL completed two locally-sponsored projects.

Dr. Heather Nachtmann led an effort that explored the use of activity-based costing in the healthcare supply chain. This project was sponsored by the Association for Healthcare Resource & Materials Management (AHRMM) and completed with the support of Mercy Hospital in Rogers, Arkansas.

Dr. Shengfan Zhang led an effort sponsored by University of Arkansas for Medical Sciences (UAMS) that explored new scheduling paradigms to assist in reducing the number of "no-shows" at the clinic at the UAMS Psychiatric Research Institute.

In 2012, CIHL launched the Health Systems Engineering Alliance which currently has 27 active member organizations. Dr. Ashlea Milburn has been selected to serve as the treasurer for the Alliance for the coming year.

CIHL
Center for innovation in healthcare logistics

How should home health nurses be routed to visit a set of patients in their homes?
How should user-generated data be considered during disaster relief decision making?

Assistant Professor Ashlea Bennett Milburn conducts research in the areas of health and humanitarian systems (HHS) and logistics systems (LS) by adapting and applying operations research (OR) tools and techniques to problems arising in these fields.

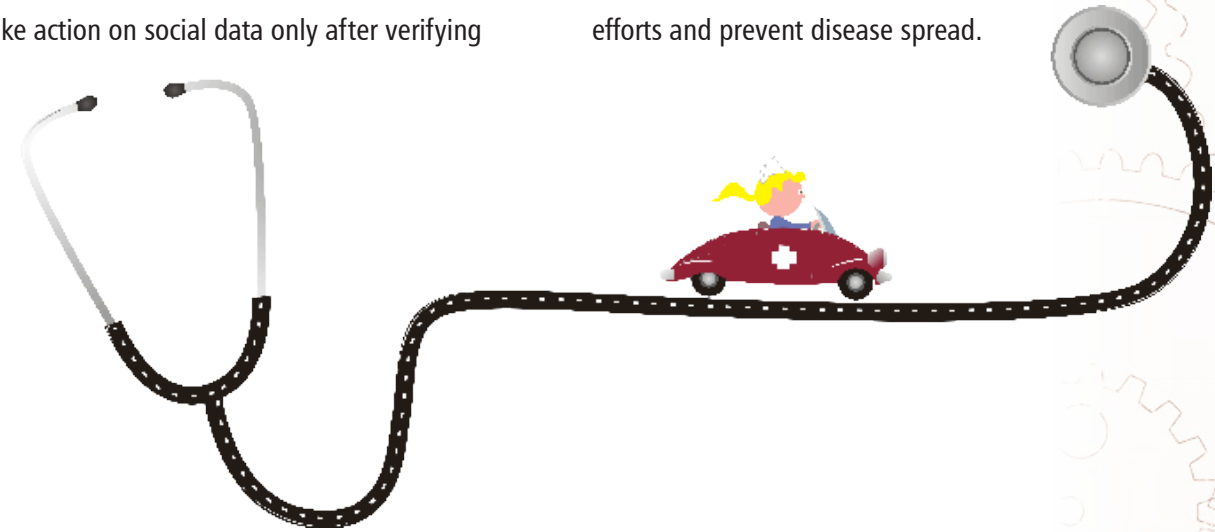
Much of her work in health systems has focused on the home health care industry which is a critically important and growing sector of the U.S. health care continuum, serving over 12 million homebound patients in 2010 alone. When utilized in partnership with other treatment components, home health care can improve patient outcomes, reduce total cost of a treatment episode and reduce hospitalizations. However, the benefits of home health care can only be realized if patients have access to these services. It is estimated that by 2020, there will be 400,000 fewer nurses than needed. Therefore, her research addresses the effective utilization of key resources and ensuring the supply of services in a geographic region is sufficient to meet demand in that area. For example, it is estimated that home health nurses in the US drive 5 billion miles per year – double the amount driven by UPS drivers worldwide. Developing models and solution approaches for more efficient home health nurse scheduling and routing will significantly increase the amount of time that can be devoted to direct patient care.

In addition to home health systems, Dr. Milburn also performs research in the area of humanitarian logistics focused on disaster response. Over 6,900 disasters were reported during the ten-year period from 2002 to 2011, causing over 1.2 million total deaths and affecting almost 2.7 billion people. Major relief organizations such as the International Federation of Red Cross and Red Crescent Societies recognize the critical roles of logistics and the

optimized use of scarce resources in saving lives in disasters, as impacted populations are left in need of food, water, shelter, and medical attention, among other things. The Federal Emergency Management Association (FEMA) describes three primary methods of issuing such supplies after a disaster. Using mobile delivery, vehicles deliver supplies directly to drop locations and points where needs have been identified. Using direct delivery, supplies are delivered to a specific location such as a shelter or hospital. Lastly, in the Points of Distribution (POD) method, commodities are delivered to centralized points (i.e., PODs) and impacted populations come to the PODs to retrieve supplies. Dr. Milburn is researching how user-generated data impacts response plans for both mobile delivery and POD methods of issuing supplies.

Social media usage during emergencies is accelerating the pace at which information becomes available to emergency managers. In fact, three-quarters of emergency agencies participating in a 2012 survey conducted by CNA Analysis & Solutions and The National Emergency Management Association (NEMA) indicated their agencies rely in some capacity on social media for information. However, concerns regarding the accuracy of social data constitute a barrier to its usage. Because the data is user-generated and it is initially not verified, a majority of respondents indicate that their agency would take action on social data only after verifying it. However, not all social data is inaccurate, and waiting to take action until it is verified contradicts one of its primary advantages – timeliness. Dr. Milburn's research analyzes the tradeoff by developing frameworks to assess whether there is value in acting on user-generated data prior to its absolute verification in the context of mobile delivery and POD location decisions.

In a new research effort, Dr. Milburn's two focus areas intersect. In November 2014 she was awarded a Provost's Collaborative Research Grant at the University of Arkansas to collaborate with a faculty member in the UA Eleanor Mann School of Nursing to study the surge capacity of home health during public health emergencies. Surge capacity is defined as the ability of the health system to expand in order to quickly meet increased demand in the event of a large-scale public health emergency. The project uniquely combines two of her primary research thrusts – home health care and disaster response planning. While the motivating scenario for their preliminary project is pandemic influenza, the researchers plan to generalize the model to wider disease scenarios and to determine interventions for improving response and potentially increasing surge capacity. They would also like to study how telehealth, through enabling simultaneous monitoring of several patients from a distance, can improve the effectiveness of response efforts and prevent disease spread.



CURRENT GRANTS

Our faculty members had active research grants exceeding $7.4M, including 15 new awards ($756,921). During 2014-2015, the following research grants were active.

Project PIs are indicated in bold face type.

Chimka, Justin, U.S. Department of Transportation, $93,132, "Economic Impacts of Lock Usage and Unavailability,"2014-2016

Gattis, Jim, and **Justin Chimka**, Arkansas State Highway & Transportation, $196,704, "Safety Performance Functions for Arkansas," 2014-2016

Gattis, Jim, Joon Jin Song, and **Justin Chimka**, Arkansas State Police, $219,419, "Seat Belt, Motorcycle Helmet, & Child Restraint Survey," 2011-2016

Gattis, Carol, Shannon Davis, James Hestekin, Todd Shields, and Richard Cassady, National Science Foundation, $599,988, "Breaking Barriers: Pathways to Graduation for Underrepresented Talent," 2008-2014

Gattis, Carol, Bryan Hill, Ed Clausen, and Janet Woodland, Arkansas Department of Education, $404,463, "UA Engineering & Mathematics Partnership- Yr2," 2014-2015

Milburn, Ashlea, Medline/CELDi, $120,000 "Medline," 2013-2015

Milburn, Ashlea, National Science Foundation, $200,000, "Non-Traditional Designs for Order Picking Warehouses," 2012-2016

Hall, Kevin, **Heather Nachtmann**, U.S. Department of Homeland Security, $554,846, "Mack-Blackwell Transportation Center National Transportation Security Center of Excellence Administration," 2008-2014

Nachtmann, Heather, Justin Chimka, and Edward Pohl, U.S. Department of Homeland Security, $440,051 "Supporting Secure and Resilient Inland Waterways," 2010-2014

Nachtmann, Heather, Edward Pohl and Chase Rainwater, U.S. Department of Defense, $99,547, "Budget Allocation for Dredge Scheduling and Procurement: A Mathematical Modeling Approach," 2012-2014

Nachtmann, Heather, and Kevin Hall, U.S. Department of Transportation, $1,967,314, Department of Transportation, "Tier 1 Maritime Transportation Research and Education Center," 2013-2017

Nachtmann, Heather, and Kevin Hall, U.S. Department of Transportation, $1,010,404, Department of Transportation, "Administration NTRT13," 2013-2017

Hall, Kevin, and **Heather Nachtmann**, U.S. Department of Transportation, $189,810, "Region 6 UTC—with OkTC," 2013-2017

Nachtmann, Heather, Arkansas State Highway & Transportation Department, $45,000, "Reg Economic Impact Study for McClellan Kerry AR River Navigation System," 2014-2015

Nachtmann, Heather, and Justin Chimka, US Department of Transportation, $212,944, "Supporting Secure & resilient Inland Waterways," 2014-2017

Needy, Kim, Construction Industry Institute, $224,067 total of which, $87,942 is the Arkansas portion, "Achieving Zero Rework through Effective Supplier Quality Practices," 2012-2015

Needy, Kim, Construction Industry Institute, $119,691, "Creating Standards for Industry-wide Quality Metrics," 2013-2015

Parnell, Gregory, National Science Foundation/CELDi, $120,000, "Center for Army Analysis," 2013-2015

Parnell, Gregory, University of Arkansas, Facilities Management, $11,020 "Portfolio Decision Analysis," 2014

Pierson, Harry, Department of Defense, $45,431, "AFRL Digital Design Integrity," 2014-2015

Pohl, Edward and Richard Cassady, National Science Foundation/CELDi, $20,000, "Research Experiences for Teachers," 2013-2014

Pohl Edward, and Kelly Sullivan, Department of Defense, $226,878, "Economic Design and Analysis of Reliability Growth Test Plans," 2013-2014

Pohl, Edward, and Kelly Sullivan, Department of Defense, $98,574, "Optimal Allocation of Test Resources in a Reliability Growth Environment," 2015

Pohl, Edward, Ashlea Milburn, Heather Nachtmann, and Manuel Rossetti, Corporate and Professional Sponsors of the Center for Innovation in Healthcare Logistics $2,930,000, (All projects), 2007-2014

Rainwater, Chase, National Science Foundation, $60,292, "Physical Internet for a Sustainable Logistics Future," 2013-2015

Rainwater, Chase, and Heather Nachtmann, US Department of Transportation, $203,879, "Optimal Dredge Fleet Scheduling within Environmental Work Windows," 2014-2016

Rainwater, Chase, and Shengfan Zhang, ABF/CELDi, $60,000, "A Decision Tool for Identifying Critical Nodes in an LTL Network," 2014-2015

Rainwater, Chase, American Air Liquide, American Transportation Research Institute, The Boeing Company, CHEP, ES3, Hewlett-Packard, JB Hunt, Leggett and Platt, Menasha Packaging Company, Material Handling Industry of America, Millwood, Inc., The Procter & Gamble Company, Procter & Gamble Eurocor N.V., S.C. Johnson, Volvo Logistics North America, Walgreens Company, Walmart, $145,0000, "Physical Internet Initiative," 2010-2012

Rainwater, Chase, National Science Foundation, $147,575, "Dynamic Resource Allocation for Law Enforcement Operations," 2013-2016

Rossetti, Manuel, National Science Foundation, $189,800, "I/UCRC for Excellence in Logistic & Distribution, Phase III," 2012-2017

Rossetti, Manuel, CELDi Center Designated Projects, $23,700, "Variation Identification System for Operational Risks," 2013-2014

Rossetti, Manuel, and Harry Pierson, National Science Foundation, Red River Army Depot, $120,000, "Phase III Red River Depot," 2014-2015

Rossetti, Manuel, National Science Foundation, I/UCRC Defense Logistics Agency, $60,000, "Mitigating the Impact of Lead Time Variability," 2012-2014

Rossetti, Manuel, National Science Foundation, I/UCRC Defense Logistics Agency, $60,000, "Improve DLA Management Processes," 2014-2015

Rossetti, Manuel, Ed Pohl, and Shengfan Zhang, Covidien, $120,000, "CELDi - A Decision Support Tool for Continuous Replenishment Program Analysis," 2013-2015

Rossetti, Manuel, Kim Needy, Carol Gattis, and Ed Clausen, National Science Foundation, $597,316, "Student Integrated Intern Research Experience (SIIRE) a Pathway to Graduate Studies," 2012-2017

Sullivan, Kelly, U.S. Department of Health & Human/CELDi, $36,363, "Assessing Distribution System Performance & Design Alternatives," 2014-2015

Sullivan, Kelly, US Department of Transportation, $154,383, "Efficient Dredging Strategies for Improving Transportation Infrastructure," 2014-2016

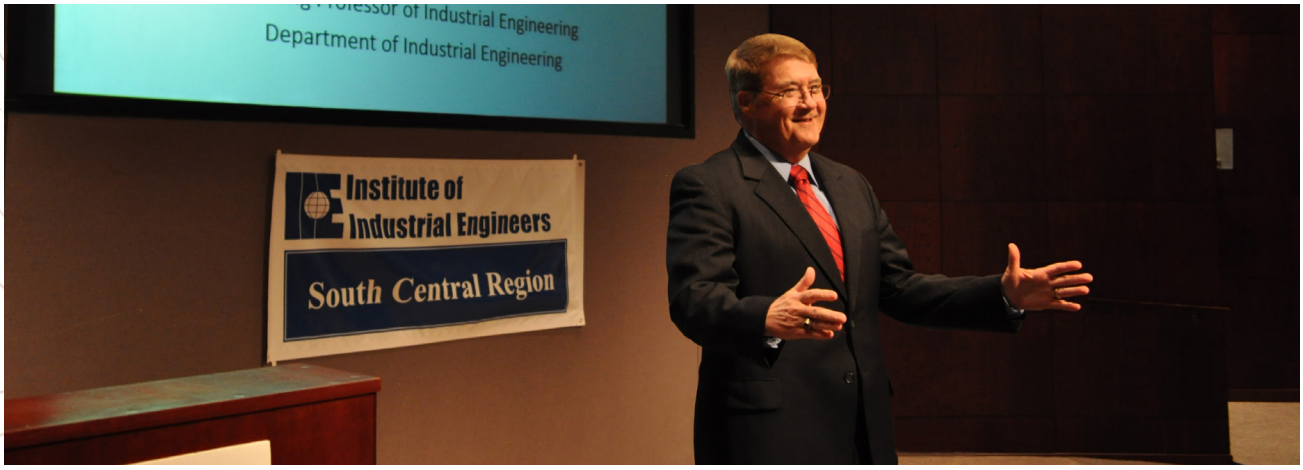
Zhang, Shengfan, U of A Medical Sciences, $60,000, "Initiation of Telemedicine-Based Collaborative Care at the Psychiatric Research Institute, 2014-2015

Zhang, Shengfan, Arkansas Department of Higher Education, $2,750, "A Decision Support Tool for Open-Access Scheduling to Reduce Patient," 2015

Zhang, Shengfan and Kristen Jozkowski, University of Arkansas Women's Giving Circle, $17,887, "Increase Awareness of Early Prevention of Cervical Cancer through Designing a Personalized HPV Vaccination," 2013-2014

Zhang, Shengfan, and Chase Rainwater, CELDi CDP, $46,115, "Development of Logistics Risk Assessment Tool," 2015-2016

Zhang, Shengfan, and Heather Nachtmann, US Department of Transportation, $221,745, "Dynamic Decision Modeling for Inland Waterway Disruptions," 2014-2016



The University of Arkansas' Student Chapter of the Institute of Industrial Engineers (IIE) and the Department of Industrial Engineering hosted the IIE 2014 South Central Regional Student Conference from January 30 to February 2, 2014 under the theme, "I.E. for Life." The conference was organized and led by advisors Dr. Chase Rainwater and Ms. Sandy Sehon and student co-chairs, Bentley Fitchue and Harsha Malshe.

The event brought together industrial engineering students and professionals to exchange knowledge, share ideas, and develop the next generation of our student leaders. Attendees included students and faculty from Oklahoma State University, University of Oklahoma, Texas Tech University, University of Texas at Arlington, University of Houston, Kansas State University, University of Missouri, Wichita State University, Lamar University, and the University of Arkansas.

Sponsors for the conference were: Wal-Mart Stores, Inc., ABF Freight System, Inc., the Institute of Industrial Engineers (IIE), the Arkansas Academy of Industrial Engineers (AAIE), P.A.M. Transportation Services, Inc., Harrison Energy Partners, and Dassault Falcon Jet Corp.

Throughout the conference, students were given opportunities to learn more about entrepreneurship, occupational ergonomics, decision analysis, and simulation. In addition, tours were offered at the Walmart Distribution Center and historic Wal-Mart Visitors Center in Bentonville, and the cutting-edge Marshalltown manufacturing and distribution facilities in Fayetteville.

The conference also showcased a highly competitive undergraduate technical paper competition, along with distinguished speakers including Department of Industrial Engineering and current President of the Institute of Industrial Engineers, Dr. Kim Needy, and Arkansas graduate and co-founder of cycleWood Solutions™, Kevin Oden.

Events concluded with a banquet on February 1st at the world-class Crystal Bridges Museum of American Art in Bentonville. The evening featured an invited talk by Distinguished Professor and Chancellor Emeritus, Dr. John A. White.

Dr. Haitao Liao

Dr. Liao received a master's degree and doctorate in industrial and systems engineering, as well as a master's degree in statistics from Rutgers University. He earned a bachelor's degree in electrical engineering at the Beijing Institute of Technology.

Liao has held faculty positions at Wichita State University, the University of Tennessee and the University of Arizona. He also served as a postdoctoral researcher at the National Science Foundation Center for Intelligent Maintenance Systems.

In his research, Liao focuses on reliability engineering, applied probability and statistics, applied operations research, probabilistic risk analysis and sensors and signal processing.

Dr. Liao's research interests include (1) reliability models, (2) maintenance and service logistics, (3) prognostics, (4) data analytics, and (5) probabilistic risk assessment. His research has been sponsored by the National Science Foundation, Department of Energy, Nuclear Regulatory Commission, Oak Ridge National Laboratory, and industry.

He currently serves as Associate Editor of the Journal of Quality Technology, Quality Technology and Quantitative Management, and the Journal of Industrial and Production Engineering.

He is a recipient of the National Science Foundation CAREER Award in 2010, the winner of the IIE 2010 & 2013 William A.J. Golomski Award, and the winner of the 2015 Stan Ofsthun Award. He is the immediate past Chair of INFORMS Quality, Statistics and Reliability (QSR) Section, and the President of IIE Quality Control and Reliability Engineering (QCRE) Division.

Dr. Sarah Nurre

Dr. Nurre received a doctorate in decision sciences and engineering systems, a master's degree in industrial and management engineering and a bachelor's degree in mathematics, all from Rensselaer Polytechnic Institute.

Her current research interests are in applying network optimization, scheduling, integer programming, and optimization algorithms to relevant applications such as infrastructure restoration, multi-layer interdependent network protection, vehicle routing for the military and public sectors, and the integration of electric vehicles with a smart grid.

Before coming to the University of Arkansas, Nurre was an assistant professor in the Department of Operational Sciences at the Air Force Institute of Technology.

Dr. Nurre's research interests are in network science, scheduling, heuristics, optimization algorithms, and combinatorial optimization. She applies these concepts to (1) the integration of electric vehicles with a smart grid, (2) infrastructure restoration and humanitarian logistics after an extreme event, and (3) military aircraft routing and refueling.

2014

- Dr. Shengfan Zhang took part in the Adopt-A-Classroom Program. The program was created by the Education Renewal Zone in 2012 after hearing from principals at schools that they were interested in having U of A faculty and staff members in their schools. The outcome energizes participants and benefits students.
- The College of Engineering Recognized Outstanding Faculty. Dr. Chase Rainwater was selected as Outstanding Teacher; Dr. Manuel Rossetti was selected as Outstanding Researcher and Dr. Justin Chimka was selected for his Outstanding Service to Students.
- Dr. Heather Nachtmann was named as the Associate Dean for Research. Nachtmann is tasked with promoting and advancing scholarship, facilitating research collaboration both within the college and with other colleges and universities, and carrying out the research vision for the College of Engineering.
- Industrial Engineering professors were recognized by the American Society for Engineering Education (ASEE):

  Dr. Kim LaScola Needy was named a Fellow.

  Dr. John White received the National Engineering Economy Teaching Excellence Award.
- Dr. Greg Parnell received a Best Paper Award at the International Symposium of the International Council on Systems Engineering (INCOSE) in July. Parnell authored the paper along with Matthew Cilli, a doctoral student at the Stevens Institute of Technology and Dennis Buede, President of Innovative Decisions, Inc. In the paper, which is entitled *"Tradeoff Study Cascading Mistakes of Omission and Commission,"* the researchers looked at factors that compromise tradeoff studies.
- Three professors were honored at the Institute of Industrial Engineers Conference in June:

  Dr. Kim LaScola Needy was recognized and honored as the IIE Immediate Past President.

  Dr. Ed Pohl was named a Fellow.

  Dr. John A. White received the Wellington Award from the Engineering Economy Division of IIE.

  Dr. White also received the Best Track Paper Award from the Industrial and Systems Engineering Research Conference, along with industrial engineering undergraduate students Jordan Sonnentag and Robert Imhoff and Tennessee Tech Faculty Member, Dr. Jessica Matson for their paper entitled *"An Analysis of Block Stacking with Lot Splitting."*
- The MarTREC Transportation Center: Director, Dr. Heather Nachtmann, received an additional $1.4 million grant from the Department of Transportation.
- The Department gained recognition at the annual conference of the American Society for Engineering Management in October in Virginia Beach, Virginia:

Dr. Ed Pohl was elected to a three-year term serving as the south central regional director.

Dr. Heather Nachtmann was elected to a four year position which rotates between secretary, president-elect, president and past-president.

Dr. Kim LaScola Needy received the Franklin B.W. Woodbury Special Service Award in recognition of her unselfish contributions of an extraordinary nature and her continuing support of the American Society for Engineering Management.

- Dr. Rainwater, Dr. English and Dr. Pohl took the Ice Bucket Challenge in August 2014. Pioneered by Chris Kennedy, the campaign encouraged people to film themselves pouring ice water

over their heads, make a donation to the ALS Association and nominate friends to do the same within 24 hours. The 'ice bucket challenge' turned a little-known disorder into a global conversation.

- Dr. Chase Rainwater was selected to participate in the National Academy of Engineering (NAE) Symposium. The symposium was a meeting of faculty members who are developing and implementing innovative education approaches.
- Dr. Greg Parnell was honored at the Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting:

Parnell received the Frank P. Ramsey Medal. This is the highest award of the Decision Analysis Society (DAS). It was created to recognize distinguished contributions to the field of decision analysis. The Ramsey Medalists are recognized for having made substantial further contributions to that theory and its application to important classes of real decision problems. The Medal is accompanied by a $1,000 honorarium.

- The Arkansas Alumni Association and the University of Arkansas honored Department Head: Dr. Ed Pohl. Pohl was selected as the recipient of the Faculty Distinguished Achievement Award. He was honored during the 2014 homecoming ceremonies.
- Dr. Letitia Pohl was selected as a finalist for the 2014 Dr. John and Mrs. Lois Imhoff Award for Outstanding Teaching and Student Mentorship.
- The Arkansas Academy of Industrial Engineering (AAIE) recognizes one faculty and two staff members each year. The 2014 Faculty Member of the Year was Dr. Heather Nachtmann. Staff members Sandy Sehon and Karen Standley were also recognized.

2015

- Dr. Kelly Sullivan received the Glover-Klingman Prize for his paper *"Exact algorithms for solving a Euclidean maximum flow network interdiction problem"* published in the journal *Networks*. His research interests center on the design of critical systems whose disruption poses a threat to homeland security. His work focuses on advancing relevant knowledge in the areas of network optimization, interdiction, reliability, and integer programming.

- In May 2015, the College of Engineering recognized industrial engineering faculty members with the following awards: Outstanding

Teacher – Dr. Chase Rainwater; Outstanding Researcher – Dr. Ashlea Milburn; and Outstanding Service to Students – Dr. Heather Nachtmann.

- The annual Institute of Industrial Engineers conference was held May 30 – June 2, 2015 in Nashville, Tennessee.

  IE Joint Publishers Book-of-the-Year award was presented to: John White, Kellie Grasman, Ken Case, Kim LaScola Needy, and David Pratt for their textbook: *Fundamentals of Engineering Economics Analysis*.

  Receiving an award for 2015 ISERC Best Track Paper Award for Facility Logistics were graduate student, Mahmut Tutam and Dr. John White for their paper: *A Conventional Warehouse Design with Multiple Docks*.

- The Arkansas Academy of Industrial Engineering (AAIE) 2015 Faculty Member of the Year was Dr. Manuel Rossetti. Staff members Jerra Hill and Garn LeBaron received staff awards.
- Dr. Manuel Rossetti was elected as a Fellow of the University of Arkansas Teaching Academy.
- Dr. Heather Nachtmann led efforts to add an additional $923,700 from the U.S. Department of Transportation to support the Maritime Transportation Research and Education Center (MarTREC) to increase economic competitiveness through efficient, resilient and sustainable transportation systems on U.S. navigable waterways.
- Dr. Ed Pohl continues to serve as Director of the online Master of Science in Engineering (MSE) degree which was ranked as the #29 Online Engineering program in the nation. The program has been found to offer one of the best values in online graduate engineering education as noted by GetEducated.com. The program was also recognized by U.S. News & World Report as the #25 Best Online Graduate Engineering program for Veterans in 2015.
- Dr. Heather Nachtmann was recognized as one of the "Top 15 of 2015." The office of the provost and chancellor for academic affairs recognized the top 15 faculty and staff researchers for 2015. These 15 researchers accounted for nearly one-third of the total external research funding.

- Dr. Chase Rainwater, associate professor of industrial engineering was selected as the recipient of the John L. Imhoff Chair for 2015 & 2016.

FIRST Lego League Razorback Invitational winner of the 1st place Mechanical Design Award from Tokorozawa, Japan, team 30009, Climbers.

- Dr. Richard Cassady is the founder of the FIRST Lego League team at Bernice Young Elementary School in Springdale involving 3rd-5th grade students. He was the program chair for the First Lego League Razorback Invitational held in May 2015 at the University of Arkansas. Seventy-two teams from around the world participated in the competition. Dr. Cassady continues to serve as the mentor for the group. FIRST Lego League is an international program that aims to get students excited about science and technology. FIRST, an acronym of "For Inspiration and Recognition of Science and Technology," teamed up with the Lego company to create the league program. Participants work alongside adult mentors to design, build and program robots to perform tasks and exercises.

FIRST® LEGO® League RAZORBACK Invitational

In 2014 the faculty of the Department of Industrial Engineering at the University of Arkansas contributed 1 book, 1 book chapter, published 40 refereed articles, recorded 6 unrefereed publications, and offered 47 invited lectures, along with more than 50 contributed papers and presentations. The faculty authors are indicated in bold face type.

Textbooks

White, J. A., K. S. Grasman, K. E. Case, K. L. Needy, & D. B. Pratt, *Fundamentals of Engineering Economic Analysis*, First Edition: John Wiley & Sons, February 2014.

Chapters in Textbooks and Handbooks

Torres, S.A.V., **S. Zhang**, and R. Akhavan-Tabatabaei, "Optimal Decision Making for Breast Cancer Treatment in the Presence of Cancer Regression and Type II Error in Mammography Results." *Analysis, Modelling, Optimization, and Numerical Techniques*, Springer Proceedings in Mathematics & Statistics, Springer International Publishing; 2014.

Refereed Journal Articles

Xiang, Y., **C. R. Cassady**, T. Jin, and C. Zhang, "Joint Production and Maintenance Planning with Machine Deterioration and Random Yield." *International Journal of Production Research*, Vol. 52 (2014): 1644-1657

Chimka, J. R. and Heng Du, "Control charts with runs rules for Poisson process data." *International Journal of Performability Engineering*, Vol. 10, No. 6 (2014): 659-661

Chimka, J. R. and Leiying Jiang, "A note on interaction and preimplantation development stages." *Journal of Cell and Animal Biology*, Vol. 8, No. 6 (2014): 110-113

Chimka, J. R. and Ege Ozdemir, "A proportional odds model of particle pollution." *Environments*, Vol. 1, No. 1 (2014): 54-59

Chimka, J. R. and Raj Anand Rajagopalan, "Product of triangular distributions with range [0,1]." *International Journal of Quality Engineering and Technology*, Vol. 4, No. 3 (2014): 261-268

Black, Ryan and **J. R. Chimka**, "An economic alternative to the c chart." *International Journal of Quality Engineering and Technology*, Vol. 4, No. 4 (2014): 107-111

Smith, Brian K., **J. R. Chimka**, and H. Nachtmann, "Multivariate Analysis and Quality Control > A 0-1 Quadratic Program for the Case of Missing Data in Regression." *International Journal of Data Analysis Techniques and Strategies*, Vol. 6 (2014): 94-104

Milburn, A. B., M. Hewitt, P. Griffin, P., and M.W.P. Savelsbergh, "The value of remote monitoring systems for treatment of chronic disease." *IIE Transactions on Healthcare Systems Engineering*, Vol. 4., No. 2 (2014): 65-79

Milburn, A. B., A. Braham, and J. McClinton, "Integrating qualitative components in quantitative courses using Facebook." *Interdisciplinary Journal of E-Learning and Learning Objects*, Vol. 10 (2014): 229-246

Nachtmann, H., Kenneth N. Mitchell, C. Rainwater, Ridvan Gedik, and E. A. Pohl, "Optimal Dredge Fleet Scheduling with Environmental Work Windows." *Transportation Research Record*, No. 2426 (2014): 11-19

Thiel, C. L., **K. L. Needy**, R. Ries, D. Hupp, and M. Bilec, "Building design and performance: A comparative longitudinal assessment of a Children's hospital." *Building and Environment*, Vol. 78 (2014): 130-136

Scala, N. M., J. Rajgopal, and **K. L. Needy**, "Managing nuclear spare parts inventories: A data driven methodology." *IEEE Transactions on Engineering Management*, Vol. 61, No. 1 (2014): 28-37

Medal, H., **C. Rainwater**, E. A. Pohl, and M. D. Rossetti, "A Bi-Objective Analysis of the R-All-Neighbor P-Center Problem." *Computers & Industrial Engineering*, Vol. 72 (2014): 114-128

Nguyen, H. N., **C. Rainwater**, E. A. Pohl and S. J. Mason, "Quantity Discount with Freight Consolidation." *Transportation Research Part E*, Vol. 66 (2014): 66-82

Medal, H., **C. Rainwater**, E. A. Pohl and M. D. Rossetti , "A Bi-objective Analysis of the R-All-Neighbor P-Center Problem." *Computers and Operations Research*, Vol. 72 (2014): 114-128

Gedik, R., H. Medal, **C. Rainwater**, E. A. Pohl and S. J. Mason, "Vulnerability Assessment and Re-Routing of Freight Trains under Disruptions: A Coal Supply Chain Network Application." *Transportation Research Part E*, Vol. 71 (2014): 45-57

Ramirez-Marquez, J., I. Hernandez, H. Medal, **C. Rainwater** and E. A. Pohl, "Robust Facility Location." *Reliability Engineering & System Safety*, Vol. 123 (2014): 73-80

Xiang, Y. and **M. D. Rossetti**, "The Effect of Backlog Queue and Load-building Processing in a Multi-echelon Inventory Network." *Simulation Modeling Practice and Theory*, Vol. 43 (2014): 54–66

Medal, H., **E. A. Pohl**, M. D. Rossetti, "A Multi-objective Integrated Facility Location-Hardening Model: Analyzing the Pre- and Post-Disruption Tradeoff." *European Journal of Operational Research*, Vol. 237, No. 1 (2014): 257–270

Sullivan, K. M., J. C. Smith, and D. P. Morton, "Convex Hull Representation of the Deterministic Bipartite Network Interdiction Problem." *Mathematical Programming*, Vol. 145 (2014): 349-376

Sullivan, K. M., D.P. Morton, F. Pan, and J.C. Smith, "Securing a Border Under Asymmetric Information." *Naval Research Logistics*, Vol. 61 (2014): 91-100

Sullivan, K. M. and J. C. Smith, "Exact Algorithms for Solving a Euclidean Maximum Flow Network Interdiction Problem." *Networks*, Vol. 64 (2014): 109-124

Zhang, S., J. S. Ivy, J. R. Wilson, and B. C. Yankaskas, "Competing Risks Analysis in Mortality Estimation for Breast Cancer Patients from Independent Risk Groups." *Health Care*, Vol. 17, No. 3 (2014): 259-269

Madadi, M., **S. Zhang**, K. H. Yeary, and L. Henderson, "Analyzing the Factors Associated with Women's Attitudes and Behaviors toward Screening Mammography Using Design-based Logistic Regression." *Breast Cancer Research and Treatment*, Vol. 144, No. 1 (2014): 193-204

Nagarajan, R., **S. Zhang**, F. C. Payton, and S. Massarweh, "Inferring Breast Cancer Concomitant Diagnosis and Comorbidities from the Nationwide Inpatient Sample using Social Network Analysis." *Health Systems*, Vol. 3, No. 2 (2014): 136-142

Refereed Conference Proceedings and Other Refereed Publications

Schneider, K. and **C.R. Cassady**, "An Introduction to Probabilistic Methods in Reliability and Maintainability," Annual Reliability and Maintainability Conference, Colorado Springs, Colorado, January, 2014.

Gaines, A.L., H.A. Schluterman, and **C.R. Cassady**, "Assessment of Peer Mentoring Program at the University of Arkansas," First Year Engineering Experience Conference, College Station, Texas, August, 2014.

Oztanriseven, Furkan, Lizzette Perez-Lespier, Suzanna Long, and **H. Nachtmann**, "A Review of System Dynamics in Maritime Transportation," *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, Montreal, Canada, May, 2014.

Lamb, K., **K. L. Needy**, R. Ries, and V. Mahjan, "Project quality metrics inside and outside the capital facilities delivery industry," *Proceedings of the Annual Conference for the American Society for Engineering Management* (ASEE), Virginia Beach, Virginia, October, 2014.

Neuman, Y., T. Alves, K. D. Walsh, **K. L. Needy**, and R. AlMaian, "Analysis of supplier quality surveillance in EPC projects," 22nd Conference of the International Group for Lean Construction, Oslo, Norway, June, 2014.

Ahmad, S., K. D. Walsh, T. C. L. Alves, and **K. L. Needy**, "An analysis of process v. inspection capabilities in fabricated, engineered-to-order construction supply chains," American Society of Civil Engineers (ASCE) Construction Research Congress, Atlanta, Georgia, May, 2014.

Scala, N. M., J. Rajgopal, L. Vargas, and **K. L. Needy**, "Using principal components analysis for aggregating judgments in the analytic hierarchy process," International Symposium of the Analytic Hierarchy Process 2014, Washington, D.C., June-July, 2014.

Parnell, G. S., M. V. Cilli, D. Buede, "Systems Engineering Tradeoff Study Process," *Proceedings of the International Symposium of the International Council on Systems Engineering (INCOSE)*, Las Vegas, Nevada, Jun 30 - July 3, 2014.

Pohl, L. and E. A. Pohl, "From Classroom to Online to Hybrid: The Evolution of an Operations Management Course," *Proceedings of the 121st American Society for Engineering Education (ASEE) Annual Conference & Exposition*, Indianapolis, Indiana, June, 2014.

Rossetti, M. D., K. Needy, C. Gattis, E. Clausen, and M. Hale, "Enrichment Activities in Support of a Student Integrated Intern Research Experience," *Proceedings of the 2014 American Society for Engineering Education (ASEE) Annual Conference and Exposition*, Indianapolis, Indiana, June, 2014.

Heydari, M., **K. M. Sullivan**, and E. A. Pohl, "Optimal Allocation of Testing Resources in Reliability Growth," *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, Montreal, Canada, May, 2014.

Sonnentag, J. J., **J. A. White**, R. C. Imhoff, and J. O. Matson, "A Consideration of the Block Stacking Multi-Product Storage Problem," *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, Montreal, Canada, May, 2014.

Matson, J. O., J. J. Sonnentag, **J. A. White**, and R. C. Imhoff, "An Analysis of Block Stacking with Lot Splitting," *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, Montreal, Canada, May, 2014.

Lamb, K., **S. Zhang**, and N. Jackson, "Association between Comorbidities and Hospital Resource Usage for Diabetes Inpatients," *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, Montreal, Canada, May, 2014.

Wang, F., **S. Zhang**, and J. Yang, "Prediction of Depressive Mood of College Students: an Elastic-Net Regularized Model," Institute for Operations Research and the Management Sciences (INFORMS) Workshop on Data Mining, San Francisco, California, November, 2014.

The Department benefits from continued support and interaction with our distinguished alumni group the Arkansas Academy of Industrial Engineering (AAIE) whose leadership sponsors endeavors to aid in student academic success and enhance student preparedness such as the A4U program (Academy Focused on Recruitment/Retention/Readiness of Undergraduates), the Global Studies Endowment program, and Mock Interview initiative.

The Academy has an active membership of 184 alumni. Inductees are distinguished graduates and are selected for sustained and outstanding contributions to the industrial engineering profession.

The College of Engineering recognizes outstanding alumni annually. The awards honor College of Engineering graduates who have provided leadership in their communities and achieved distinction in their fields of endeavor. From the Department of Industrial Engineering the following awards were presented.

College of Engineering Hall of Fame

- 2014 – Robert Davidson, B.S.I.E.1970
  Mr. Davidson had a 38-year career with Arkansas Best Corporation (now known as ArcBest), retiring in 2009 as president and chief executive officer and also CEO of the company's principal subsidiary, ABF Freight System.
- 2015 – James Hefley, B.S.I.E. 1961
  Mr. Hefley had a 19-year career with IBM. After that, he helped build Gemini Consulting, a management consulting company focused on business issues.

The Hall of Fame was established in 1965 to recognize prominent graduates and leaders who have made outstanding contributions to the engineering profession and to society as a whole.

Distinguished Alumni Award

- 2014 – Dana Sedgass – B.S.I.E. 1981, M.S.I.E. 1982, Partner (retired), Accenture.
- 2015 – Melinda Faubel – B.S.I.E. 1980, Director of External Affairs with AT&T Arkansas.

Early Career Award

The Early Career Award recognizes exceptional professional and personal achievements of more recent College of Engineering graduates. The recipients are:

- 2014 – Drew Harrison, B.S.I.E. 2000, Vice President of operations, Harrison Energy Partners
- 2015 – Ami Spivey, B.S.I.E. 1995, Senior Vice President, Walmart International.

Other Awards of Note

- Alumnus and AAIE founding president, Larry Stephens, B.S.I.E. 1958, Chairman of the Board of Mid-South Engineering in Hot Springs, was awarded the 2014 Andrew J. Lucas Alumni Service Award from the Arkansas Alumni Association.
- Mr. Stephens also received the honor of Engineer of the Year by the Arkansas Society of Professional Engineers.
- Bill Harrison, B.S.I.E. 1966, received the Andrew T. Boggs Service Award from ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). The award recognizes an 'Exceptional Service Award' recipient for continuing unselfish, dedicated and distinguished service.
- Bryan Hill (BSIE 2003), Assistant Dean for Student Recruitment, Honors and International Programs in the College of Engineering, was one of the three finalists selected for the 2014 GEDC Airbus Diversity Award.

- Kevin Oden, B.S.I.E. 2007, Co-Founder of cycleWood Solutions launched a product line for compostable consumer trash bags as a sustainable alternative to high-density plastic bags. The product is now sold commercially. Also, cycleWood has developed 'green' bags for pet waste for a Dallas-based company called Bags on Board. Mr. Oden's company has obtained funding support from the National Science Foundation through the Small Business Innovation Research Program. They have also been selected for an Edison Award, one of the highest honors a company can receive in the name of innovation and business.

2015 Alumni Hall of Fame, Distinguished Alumni, and Early Career Award Winners

LIAISON COMMITTEE

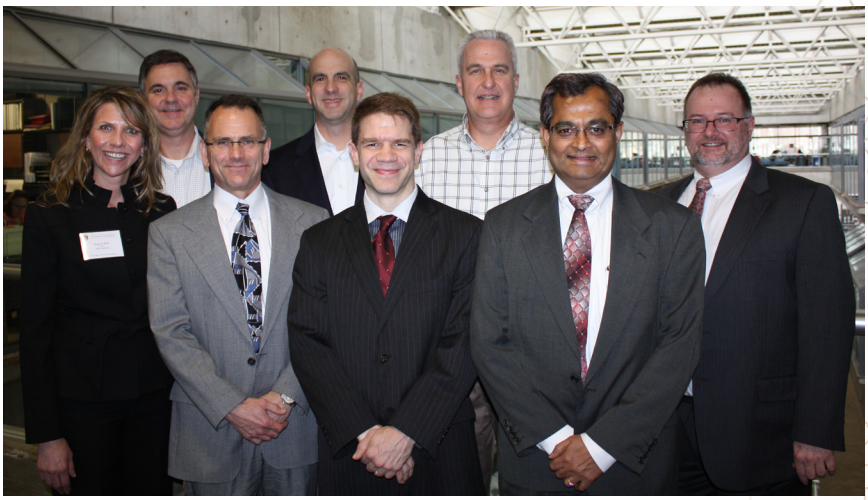
The Arkansas Academy of Industrial Engineering (AAIE) was founded in 1986 to recognize the achievements of University of Arkansas Industrial Engineering graduates and to provide continuing guidance and support to the Department of Industrial Engineering. The Academy also provides its members with the opportunity to nurture the organization that played an important role in their professional growth and development. Academy members provide tremendous financial resources that endow many scholarships for the Industrial Engineering students.

The AAIE organizes a Liaison Committee that serves as our advisory board and meets annually to evaluate the department. The committee is comprised of accomplished professionals from academia, business and industry who bring both an applied perspective and an independent assessment to the industrial engineering program at the University of Arkansas.

It is the opinion of this year's Liaison Committee that overall, the Industrial Engineering Department continues to be extremely successful in delivering its mission. Across the board, student, faculty and staff successes over the past year are a testament to this. Departmental leadership remains strong and committed to continuous improvement.

Recent members of the Liaison Committee include:

- **G. Kent Burnett**, Senior Vice President of IT at Dillard's.
- **Mike Gross, FACHE**, Administrator, Mt. Carmel Community in Rogers, Arkansas.
- **Sunderesh S. Heragu**, Professor and Head of the School of Industrial Engineering and Management at Oklahoma State University.
- **David Humphrey**, Vice President of Investor Relations and Corporate Communications, ArcBest Corporation.
- **Angela Kuli**, Owner, AHK Consulting.
- **J. Cole Smith**, Professor and Chair of the Industrial Engineering department at Clemson University.
- **Tarek Taha**, Senior Director of Intermodal Engineering & I.T., J.B. Hunt Transport Services, Inc.
- **Gary Whicker**, Senior Vice President of Engineering and Enterprise Services at J.B. Hunt Transport Services, Inc.
- **Rick Wilkinson**, Senior Director of Logistics Engineering for Walmart.



Back: Angela Kuli, Mike Gross, Tarek Taha, David Humphrey, Dr. Ed Pohl
Front: Gary Whicker, Dr. J. Cole Smith and Dr. Sunderesh Heragu.

CONTACT INFORMATION

Department of Industrial Engineering
4207 Bell Engineering Center • University of Arkansas • Fayetteville, AR 72701
Phone: (479) 575-3156 • Fax: (479) 575-8431
www.industrial-engineering.uark.edu

Faculty

C. Richard Cassady ..... cassady@uark.edu ..... (479) 575-6735

Justin R. Chimka .....jchimka@uark.edu ..... (479) 575-7392

John R. English.....jre@uark.edu ..... (479) 575-3054

Carol S. Gattis ..... csg@uark.edu ..... (479) 575-7381

Haitao Liao.....liao@uark.edu ..... 79) 575-6196

Ashlea Bennett Milburn.....ashlea@uark.edu ..... (479)575-3702

Heather Nachtmann ..... hln@uark.edu..... (479) 575-5857

Kim LaScola Needy..... kneedy@uark.edu ..... (479) 575-7762

Sarah Nurre.....snurre@uark.edu ..... (479) 575-3940

Greg S. Parnell..... gparnell@uark.edu..... (479) 575-7423

Harry A. Pierson ..... hapierso@uark.edu ..... (479) 575-6034

Edward A. Pohl ..... epohl@uark.edu..... (479) 575-6029

Letitia (Tish) Pohl.....lpohl@uark.edu ..... (479) 575-4208

Chase Rainwater ..... cer@uark.edu..... (479) 575-2687

Sarah E. Root .....seroot@uark.edu ..... (479) 575-6032

Manuel D. Rossetti ..... rossetti@uark.edu ..... (479) 575-6756

Kelly Sullivan.....ksulliv@uark.edu ..... (479) 575-2563

John A. White .....jawhite@uark.edu ..... (479) 575-2773

Shengfan Zhang ..... shengfan@uark.edu ..... (479) 575-3571

GEARED TOWARD *EXCELLENCE!*

6
FACULTY FELLOWS
Institute of Industrial Engineers

FACULTY FELLOWS in
9 societies

2
FACULTY FELLOWS
American Society for Engineering Management
American Society for Engineering Education
Institute for Operations Research and Management Sciences

1
FACULTY FELLOW
International Council on Systems Engineering
Society for Decision Professionals
Society of Reliability Engineers
Lean Systems Society
Military Operations Research Society

1950
The year the **IE PROGRAM** began at the U of A.

1
NATIONAL ACADEMY of ENGINEERING MEMBER
John A. White was elected in 1987. Membershihip is one of the highest professional honors accorded an engineer.

2
ENDOWED CHAIRS
John and Mary Lib White Systems Integration Chair in Industrial Engineering
John L. Imhoff Chair in Industrial Engineering

2
ENDOWED PROFESSORSHIPS
James M. Hefley and Marie G. Hefley Professorship in Logistics and Entrepreneurship
Twenty-First Century Professorship in Engineering

IE GRADUATES
in the 2014-2015 Academic Year
70

UNIVERSITY OF
ARKANSAS

College of Engineering
Industrial Engineering

Department of Industrial Engineering
University of Arkansas
Fayetteville, Arkansas 72701
industrial-engineering.uark.edu