UNIVERSITY OF ARKANSAS

College of Engineering
Industrial Engineering

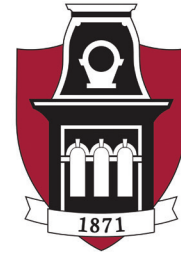# ANNUAL REPORT

2022-2023

INSTITUTE OF
**INDUSTRIAL
& SYSTEMS**
ENGINEERS

75th ANNIVERSARY

CONTENTS

Producing Leaders That Will Solve Tomorrow's Engineering Challenges

UNIVERSITY OF
ARKANSAS.

College of Engineering
Industrial Engineering

DEPARTMENT HEAD WELCOME

Dear Colleagues, Alumni, Students and Friends,

It is with great pleasure that I present to you the Department of Industrial Engineering's annual report. As the newest department head of the industrial engineering department, I am delighted to share the significant accomplishments, advancements and highlights from the past year.

In this report, you will find a comprehensive overview of our department's achievements in areas such as academics, research, community engagement and more. This document serves as a testament to the dedication, hard work and innovation exhibited by our faculty, staff, students and alumni.

Throughout this report, you will notice that our faculty members have continued to excel in their research endeavors, contributing valuable insights to their respective fields. Their groundbreaking work not only enriches our academic community but also has a positive impact on society at large. Recently, Heather Nachtmann was named an Arkansas Research Alliance Fellow, which recognizes her exemplary contributions to one of Arkansas' core research focus areas. She was honored by the Governor at a reception in Little Rock for this extraordinary accolade. Manuel Rossetti was honored at the annual Institute of Industrial and Systems Engineers (IISE) conference with one of the organization's highest honors, the Albert G. Holzman Distinguished Educator award due to his achievements in teaching throughout his notable career.

I am excited to announce the arrival of five new additions to our faculty. With a commitment to advancing knowledge and innovation in the field, these new faculty members bring a wealth of expertise. Haoming Shen and Rob Curry have been hired as Assistant Professors. Alice Squires and Kerry Melton are serving the Operations Management and Engineering Management graduate programs as Teaching Professor and Teaching Associate Professor, respectively. David Paulus joins us as Professor of Practice. I look forward to watching our department continue to flourish with these new faculty members on board!

Additionally, we are proud to showcase the accomplishments of our students who have demonstrated exceptional academic achievements, leadership and community engagement. Their success stories inspire us and reaffirm our commitment to providing them with a transformative educational experience. Recent graduates Abby Harris and Paris Joslin were recognized by the Arkansas Alumni Association with the Senior of Significance honor. This is a very exciting honor since only 71 students from the graduating class were chosen.

You will learn about many more honors and accolades throughout this report, so I hope you will continue reading.

We extend our sincere appreciation for your continued support and partnership. Together, we look forward to the opportunities and challenges that a new academic year will bring, as we strive to build upon our accomplishments and create a brighter future for the University of Arkansas Department of Industrial Engineering.

Chase Rainwater, Ph.D.
Professor and Department Head
Industrial Engineering
cer@uark.edu

A CHANGE OF LEADERSHIP

In May of 2023, University of Arkansas Provost Terry Martin named Ed Pohl the dean of the Graduate School and International Education. Pohl succeeded Curt Rom who served as interim dean since January 2022.

"I'm pleased to appoint Dr. Ed Pohl as the new dean of the Graduate School and International Education," Martin said. "Dr. Pohl led the university's largest graduate degree program and has also served as the director of the master's degree program in engineering and the department head of a large and complex department since 2014. His own personal commitment to graduate education and his extensive experience overseeing graduate degree programs and research excellence in the College of Engineering make him well suited for his new role."

"The Department of Industrial Engineering has meant so much to me as both a student and a faculty member."

-- Chase Rainwater

Pohl, who joined the College of Engineering as an associate professor in 2004, had served as head of industrial engineering since 2014. He assumed the new role on June 1, 2023.

College of Engineering Dean, Kim Needy, then named the new Department of Industrial Engineering head on June 1st with Chase Rainwater, associate department head, taking over the role.

Known for his outstanding mentorship of students, Rainwater earned a Bachelor of Science in Industrial Engineering from U of A in 2004 and a Ph.D. in industrial and systems engineering from the University of Florida in 2009.

He joined the College of Engineering as an assistant professor of industrial engineering in 2009 and has been promoted twice, achieving the rank of professor in 2021.

He has also served as director of the J.B. Hunt Innovation Center of Excellence, inaugural director of the Master of Science in operations analytics program and co-director of the Arkansas Security Research and Education Institute.

"The Department of Industrial Engineering has meant so much to me as both a student and a faculty member. It is a tremendous honor to be its next leader. We are fortunate to have exceptional faculty and staff, and passionate alumni. Together we will continue our focus on the development of students and our commitment to their success," Rainwater said. "I look forward to building on the tremendous momentum created by Dr. Ed Pohl as the department head. He has been an influential mentor to me and so many others. I am grateful for his leadership and dedication to the Department of Industrial Engineering and the University of Arkansas."

Rainwater is regarded as an exceptional educator, teaching numerous courses in computing, as well as optimization, probability and statistics. His research interests include supply chain logistics, security and food safety. His work has been supported by the National Science Foundation, U.S. Department of Transportation, U.S. Department of Homeland Security and U.S.

INDUSTRIAL ENGINEERING | UNIVERSITY OF ARKANSAS

Department of Education, in addition to multiple national labs, nonprofit organizations and companies. Rainwater is a strong supporter of the Arkansas STEM community and has been a mentor in the FIRST program since 2010.

"Chase brings a wealth of expertise, experience and passion that will ensure the department's success in training the industrial engineers of tomorrow," said Dean Kim Needy. "His impressive track record of research and teaching will undoubtedly help us further our strategic vision, strengthen industry partnerships and attract top-tier faculty and students."

Rainwater Recognized with Title of Fellow

Rainwater was awarded the title of fellow of the Institute of Industrial and Systems Engineers in June of 2023, recognizing his outstanding leadership and significant, nationally recognized contributions to industrial and systems engineering. In addition, the University of Arkansas Teaching Academy inducted him as a Fellow of the Academy. He was named one of two finalists for the Dr. John and Mrs. Lois Imhoff award for Outstanding Teaching and Student Mentorship, was the recipient of the 2023 Paul Cronan Technology Teaching Excellence Award from the Wally Cordes Teaching and Faculty Support Center at the U of A and named the 2022 Best Teacher in the Department of Industrial Engineering by students.

Always looking to the future, Rainwater and University Professor Manuel Rossetti led an innovative change to the computing offerings in the department's undergraduate program. This effort resulted in a two-semester computing sequence designed specifically for sophomore-level industrial engineering students. The courses present core programming and computing concepts in the context of fundamental industrial engineering problems. The duo was recognized internationally with the 2021 International Innovations in Education Award given by the Institute of Industrial and Systems Engineers.

> *"Working with the Intermodal Engineering team at J.B. Hunt was the professional experience of a lifetime."*
>
> *-- Justin Chimka*

INTERMODAL ENGINEERING AT J.B. HUNT

Associate Professor Justin Chimka completed a nine-month off-campus duty assignment working with the Intermodal Engineering group at J.B. Hunt Transport Services Inc., the Fortune 500 transportation company in nearby Lowell, Arkansas, during the 2022-23 academic year.

Its intermodal segment, which is focused on moving freight by multiple modes – usually from train to truck or ship (or vice versa) – makes J.B. Hunt the largest intermodal company in the world. And its mission is "to create the most efficient transportation network in North America."

Chimka used his expertise in engineering statistics and operations analytics to help advance projects and implement solutions for Deric Bidwell, director of Intermodal Engineering at J.B. Hunt. They worked together closely with other logistics engineers and network planners on several projects across most parts of the intermodal business. One project focused on managing the company's immense intermodal fleet of containers, chassis and trucks. Some projects related to statistical process control for monitoring important system levels and aspects of cost. Others relied on building empirical models to learn from data and make better business decisions with respect to things like driver productivity.

The idea for this sabbatical came after years of successful collaboration between Chimka and Bidwell on research funded by the J.B. Hunt Innovation Center of Excellence, "a combined effort between the company, the College of Engineering and the Sam M. Walton College of Business to advance supply chain management efficiency through technology." And the sabbatical itself was made possible by the support of Eric Ervin, vice president of Engineering & Technology at J.B. Hunt.

Chimka felt very much like part of the team at J.B. Hunt. He was issued a computer, email address, photo ID and keycard like every other employee and moved freely inside the Lowell corporate headquarters, where he had dedicated workspace. In addition to the day-to-day satisfaction Chimka gained from working on a team to achieve common goals, there were specific highlights that stand out. Those include presenting his work to the company's 100-plus logistics engineers at their quarterly meeting and volunteering with team members at the Northwest Arkansas Food Bank.

Chimka attended companywide "town halls" featuring executive officers including President Shelley Simpson and enjoyed the privilege of participating in the company's annual Million Mile celebration of drivers achieving 2-plus million safe driving miles. He was even present when co-founder Johnelle Hunt visited the corporate headquarters and shared stories about the early days of the company. According to Chimka, "working with the Intermodal Engineering team at J.B. Hunt was the professional experience of a lifetime."

drivers.jbhunt.com/divisions/intermodal

The research aims to make informed decisions, effectively prioritize the allocation of limited funding and optimize the utilization of resources for maintaining and enhancing USACE's Inland Navigation infrastructure.

Water exits the dam on the Columbia River at The Dalles, Oregon. - Shutterstock

INLAND NAVIGATION INFRASTRUCTURE

The United States Army Corps of Engineers (USACE) Civil Works (CW) program manages a collection of assets that is worth around $250 billion. USACE aims to employ asset management techniques to effectively operate and maintain these physical assets, such as locks, dams and waterways.
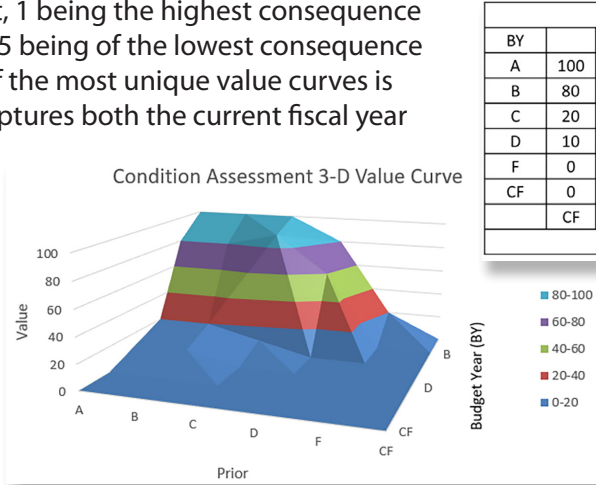
A team at the University of Arkansas is collaborating with the U.S. Army Engineer Research and Development Center (ERDC) to identify appropriate metrics for asset management and to develop a line-of-sight model using decision model with multiple objectives. The primary focus is on the Inland Navigation assets, which include locks and dams that support cargo transportation and

recreational navigation through U.S. inland waterways. The ultimate objective of the project is to provide the USACE with a value model that would enable better tradeoff decisions for each asset business line and create a model that can be used across all the assets they manage.

To achieve this objective, the team began by focusing on Inland Navigation (e.g., Locks and Dams) and created a decision model with multiple objectives. They identified the metrics with the greatest increase in value from additional funding, created value curves for these metrics, and assigned weights using a swing weight matrix. Generally, the value curves are 2-D since they capture the measurement of the metric and assign value

to the metric measurement. An example of this would be consequence, it is measured from 1 (high consequence) to 5 (low consequence).

Taking this information, the team then assigned value to the measurement, 1 being the highest consequence is assigned 100 and 5 being of the lowest consequence is assigned 0. One of the most unique value curves is condition since it captures both the current fiscal year and future outlook for condition. The team named this newly created metric 'Condition Improvement,' and the subsequent value curve was 3-D.

As proof of concept for this model, they used the top ten locks and dams that required the most funding in a particular year. After performing optimization with Excel Solver, the team identified and assigned the highest weight to the metric 'Condition Improvement,' as it best

demonstrates the impact of funding repairs to locks and dams. This decision was based on the understanding that the condition of locks and dams significantly influences other metrics. For example, when the asset's condition is poor, it might lead to a decrease in the Level of Service and an increase in overall risk. Thus, prioritizing 'Condition Improvement' ensures that investments in maintenance yield the most significant positive outcomes. After determining the weighted values for all metrics, the team plotted the values in a cumulative value curve, illustrating the cost versus value relationship for investments in the maintenance of locks and dams.

The research aims to make informed decisions, effectively prioritize the allocation of limited funding, and optimize the utilization of resources for maintaining and enhancing USACE's Inland Navigation infrastructure.

3-D Value Function						
BY						
A	100	100	100	80	20	0
B	80	80	90	60	0	0
C	20	20	10	0	0	0
D	10	10	0	0	0	0
F	0	0	0	0	0	0
CF	0	0	0	0	0	0
	CF	F	D	C	B	A
	Prior					

Condition Improvement Value Function

The Fishway on Bradford Island at the Bonneville Dam, Cascade Locks, Oregon

Shutterstock

RESEARCH IN THE NEWS

Engineering Researchers Join Roundtable on Maritime Freight Transportation Featuring MARAD Administrator

Maritime freight transportation was a hot topic in Fort Smith, when stakeholders from across Arkansas and the United States gathered at the WAIA/MARAD Roundtable Event held at the Peak Innovation Center on April 12, 2023.

Co-organized by the U.S. Department of Transportation Maritime Administration, Western Arkansas Intermodal Authority, Western Arkansas Planning & Development District and Frontier Metropolitan Planning Organization, the roundtable event focused on current challenges facing maritime and multimodal transportation agencies, carriers and shippers and discussed funding opportunities and innovation solutions to address these challenges.

Sarah Hernandez, associate professor of civil engineering and Walter E. Hicks and Blossom Russell Hicks Endowed Chair for Infrastructure Engineering, and Heather Nachtmann, professor of industrial engineering and Earl J. and Lillian P. Dyess Endowed Chair in Engineering, were invited speakers at the event.

Nachtmann overviewed MarTREC, the Maritime Transportation Research and Education Center led by the U of A (martrec.uark.edu) and shared how maritime transportation stakeholders can engage in research and workforce development opportunities with MarTREC.

Home to the McClellan-Kerr Arkansas River Navigation System and more than 1,000 miles of navigable waterways, Arkansas is a major contributor to the nation's inland waterway transportation system.

Resilient and efficient movement of maritime freight across domestic and international supply chains is vital

to the nation's economic strength and to maintaining and improving the quality of life for all Americans.

"MarTREC is a key contributor to preserving the nation's transportation system through sustainable and resilient maritime and multimodal supply chains and infrastructure," said Nachtmann, who is also director of MarTREC. "It was an honor for us to share the podium with Administrator Phillips."

Western Arkansas Planning & Development District Metropolitan Planning Organization Director Reese Brewer, Sarah Hernandez, Ann Phillips and Heather Nachtmann.

The featured speaker was U.S. Department of Transportation Maritime Administration Administrator Ann Phillips, who discussed the importance of the inland and coastal waterways to the nation's multimodal supply chain and presented several funding programs available to expand maritime transportation.

In 2011 Western Arkansas Intermodal Authority (WAIA) was formed when the Western Arkansas Planning and

Development District (WAPDD) was tapped to manage the authority. The roundtable is part of an effort by WAIA and WAPPD to have the region receive a preferred MARAD designation.

CELDi Holds Spring Industrial Advisory Board Meeting and Research Symposium

Students, faculty and industry leaders from across the country gathered April 10 & 11 at Kansas State University in Manhattan, Kansas, to discuss innovations in logistics and distribution as part of a program led by the University of Arkansas Department of Industrial Engineering.

The meeting was organized by the Center for Excellence in Logistics and Distribution (CELDi), directed by Burak Eksioglu, professor of industrial engineering.

Kansas State Engineering Dean, Matthew J. O'Keefe opened the meeting with his welcome. Other speakers at the event included Edwin Keh, CEO of The Hong Kong Research Institute of Textiles, and Dan Vanden Brink, partner at Decision Spot.

Faculty and student research presentations are the focus of the meeting, with projects presented by the primary investigator of the project.

"He analyzed data, developed, and tested predictive models for predicting administrative and production lead time. He has provided summary results and meaningful insights that I would typically expect from graduate students."

The annual Speed Mentoring Session is always of particular interest to the students attending. They were able to connect for mentoring briefly with some of the best industry representatives in the country. The valuable experience of these sessions cannot be overstated.

During the industry panel session, attendees were able to ask questions and hear the interactions among those participating. Members of the panel included:

- Ashton Kappelman, senior manager at US Foods
- Anita Ranhotra, distribution engineering manager at Hallmark Cards, Inc.
- Chris Tonn, simulation and data management engineer at Spirit Aerosystems
- Dan Vanden Brink, partner at Decision Spot
- Dennis Haner, PCES executive, Chief Logistics Office at USPS.

Students presented their projects to industry members during the poster session. This year, Wesley Tate from the University of Arkansas received the CELDi Outstanding Undergraduate Student Achievement Award. He is advised by Manuel Rossetti. In his nomination letter, Rossetti commented, "He analyzed data, developed, and tested predictive models for predicting administrative and production lead time. Wesley also developed and presented slides to our sponsor. He has provided summary results and meaningful insights that I would typically expect from graduate students." Wesley's research was titled "Lead Time Distribution Modeling Based on Item Characteristics."

Tate Hansenclever, also of the University of Arkansas received an Honorable Mention. Nominated by Eric Specking, Tate has excelled in the research of Specking's team. In his letter Specking commented, "Since joining our team, he has contributed greatly to our CELDi project and to the systems engineering community. He used and is using multiple systems engineering and decision analysis artifacts to improve the understanding of our product's requirements in an agile development process and our communication among the overall geographical diverse and multidisciplinary teams. Additionally, he connected these artifacts to INCOSE's systems engineering principles and found by using these artifacts in an agile development environment one can find knowledge gaps among team partners and identify gaps among interfaces." Hanseclever's research title was "Smart Base Installations: Improving the Agile Development of Multidisciplinary Systems of Systems Projects Using Systems Engineering Techniques."

U of A Faculty Take Part in Inaugural INFORMS Conference on Quality, Statistics, and Reliability

The inaugural INFORMS Conference on Quality, Statistics, and Reliability took place June 6-8 in Raleigh, North Carolina. The conference was organized by the Quality, Statistics, and Reliability Section of the Institute for Operations Research and the Management Sciences. Its aim was to bring together professionals from academia and industry to foster discussions, learning, inspiration and collaborations.

One of the sessions was titled "Leader Forum – Value and Need for Industry and Academia Collaboration." The panel included distinguished experts from various fields, including Karl Schubert, who is a professor of practice and associate director of the Data Science Program at the University of Arkansas. Schubert was invited to share his insights on industry-academia collaborations in research and education.

The other panelists included:

- Professor Vijay Nair, head of Advanced Technologies for Modeling at Wells Fargo.
- Professor Peihua Qiu, founding department head of biostatistics at the University of Florida.
- John Sall, founder and CEO of JMP.
- Professor Julie Swann, head of the Department of Industrial & Systems Engineering at North Carolina State University.
- Professor Fugee Tsung, active dean at the Hong Kong University of Science and Technology.

During the panel discussion, the participants addressed several key questions, including the gaps between academic research and industrial practice, necessary skills for successful academic-industry collaboration, and the effort and rewards involved in such collaborations.

Haitao Liao, a U of A professor, the John and Mary Lib White Endowed Systems Integration Chair and one of the co-organizers of this panel, said, "Dr. Schubert's experience and insightful comments definitely help universities establish successful programs that cultivate robust collaboration between industry and academia in research, education and service."

Schubert shares insights on industry-academia collaborations in research and education at the inagural INFORMS Conference on Quality, Statistics, and Reliability.

The Quality, Statistics, and Reliability Section, to which the panelists belong, is an interdisciplinary section of INFORMS that brings together individuals interested in research. With members from over 50 countries and regions worldwide, the section encourages discussions and interactions among academicians and professionals in these fields, making it a prominent community in the domain.

Artist Rendering of the Institute for Integrative and Innovative Research (I³R)

INSTITUTE FOR INTEGRATIVE AND INNOVATIVE RESEARCH (I³R)

U of A Chancellor Charles Robinson and Congressman Steve Womack were among the more than 200 guests, including faculty, staff and community leaders, gathered at the site of the future home of the Institute for Integrative and Innovative Research (I³R) to celebrate "topping out" the new building. The group signed the final piece of cross-laminated timber, literally leaving their mark on the building, before it was hoisted and set in place with a construction crane.

The institute differs from similar research organizations in two key aspects: its focus on convergence research

and its mandate to stimulate regional economic growth. As defined by the National Science Foundation, convergence research aims to address complex problems through deep integration across disciplines.

The institute's convergence approach goes beyond academic disciplines to include industry, government and non-profit sectors, which are needed to deploy and scale solutions derived from the research, leading to economic growth and positive societal impact.

The building is slated to open in late 2024.

RESEARCH CENTERS

The Department of Industrial Engineering at the University of Arkansas has a longstanding tradition of conducting leading-edge research in all areas of industrial engineering.

- Reliability, Maintainability and Quality Engineering
- Transportation, Logistics and Distribution
- Healthcare Systems Engineering
- Engineering Management
- Big Data and Data Analytics

A special emphasis of our research has been in the area of quantitative modeling and analysis of transportation and logistics systems through our major research centers.

This synergistic research takes advantage of our unique access to major organizations with world-class logistics and distribution operations.

Our research has:

- Changed business practices in order to simultaneously lower inventories and reduce stock-outs,
- designed next-generation distribution centers,
- developed new global identification standards,
- optimized the design of global supply chains to improve their efficiency and resilience to disruption events.

Our research is supported by the following centers.

The mission of CELDi is to enable member organizations to achieve logistics and distribution excellence by delivering meaningful, innovative and implementable solutions that provide a return on investment. Research activities, graduate and undergraduate course offerings, professional development and continuing education opportunities combine to form the foundation and structure for educating the next generation of engineers in logistics and distribution centers.

The Mack-Blackwell Transportation Center (MBTC) has led a U.S. Department of Transportation University Transportation Center since 1992. MBTC builds on its geographic access to road, river and rail corridors and industry access to global logistics leaders (including Walmart, J.B. Hunt Transport and ABF Freight Systems) to lead nationally relevant multimodal research to carry people and freight to their destinations efficiently and effectively. MBTC works closely with the Arkansas Department of Transportation and many other transportation stakeholders across the nation.

The role of the Arkansas Security Research and Education Institute is to bring important practical security problems to the most talented University of Arkansas' researchers, to recruit industry members to sustain the institute and provide research and educational vision, to assist institute's researchers in pursuing competitive research funding and to facilitate improving the security education at the University of Arkansas.

In 2013, the University of Arkansas partnered with Jackson State University, Louisiana State University and the University of New Orleans to form the Maritime Transportation Research and Education Center (MarTREC), which was competitively selected as a USDOT Tier 1 UTC under the MAP-21. In 2016 with continued funding through the FAST Act, the MarTREC consortium added Texas A&M University and Vanderbilt University and worked to preserve the nation's transportation system through efficient, resilient, and sustainable maritime and multimodal logistics and infrastructure.

Now in 2023 through the Bipartisan Infrastructure Law (BIL) MarTREC will contribute primarily to four United States (U.S.) Department of Transportation (DOT) strategic goals: 1) Economic Strength and Global Competitiveness by addressing resilient supply chains and system reliability and connectivity, 2) Climate and Sustainability by increasing the safety, effectiveness, equity, and sustainability of our nation's transportation infrastructure and the communities it serves, 3) Safety by supporting system response and recovery plans and protocols to minimize the effects of system disruptions and hasten system recovery, and 4) Equity by expanding transportation options in underserved rural and urban communities.


The System Design and Analytics Laboratory helps research sponsors define and achieve their strategic objectives by developing innovative systems engineering, decision & risk analysis and trade-off analytics methods to identify promising opportunities and create high value solutions with acceptable risk. Our researchers have made significant contributions to the agile development of integrated performance, cost and schedule modeling and quantitative Set-Based Design.

The J.B. Hunt Innovation Center of Excellence (ICE) workspace supports innovative research in logistics, technology and business solutions. The work was supported by a grant from J.B. Hunt in 2017. The efforts of the center are led by faculty and student collaborators from the College of Engineering and the Sam M. Walton College of Business (WCOB) in partnership with J.B. Hunt professionals.

DEPARTMENT NEWS
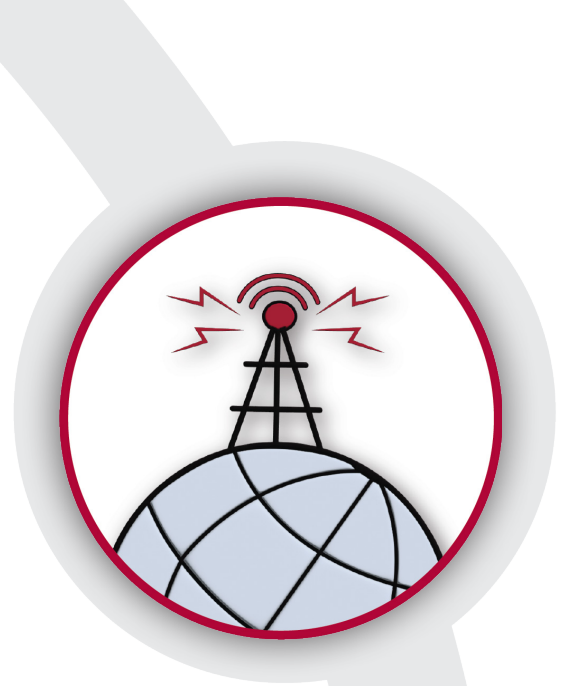
Three From U of A Named Among Top 100 Women of Impact in Arkansas

The Women's Foundation of Arkansas, Little Rock *Soirée* magazine and Arkansas Business Publishing Group announced the Top 100 Women of Impact in Arkansas honorees in May.

Three luminaries from the University of Arkansas were named among the Top 100, a prestigious list that includes founders, business executives, educators and civic leaders from across the state.

"I am proud to represent and be part of an institution committed to empowering women in STEM fields."

-- Kim Needy

Kim Needy, dean, College of Engineering; Sarah Goforth, executive director of the Office of Entrepreneurship and Innovation; and Denise Thomas, CEO, World Trade Center Arkansas, were among the "100 women … impacting Arkansas today" and "making it a better state for future generations," according to Anna Beth Gorman, CEO of the Women's Foundation of Arkansas, which helped assemble the list.

Needy, who is the first female dean of the engineering college, said she was honored to be recognized alongside these outstanding leaders at U of A and across the state.

"I am proud to represent and be part of an institution committed to empowering women in STEM fields," Needy said. "I hope young women and men will look to

this group for inspiration to break barriers and never see limits in their potential for excellence."

Winnowed from more than 600 submissions, the list revived a publication from the 1990s highlighting the top 100 women in Arkansas, according to Mitch Bettis, Arkansas Business Publishing Group who assisted in compiling the top 100.

Little Rock *Soirée* magazine, which also aided ABPG and the foundation with the list, highlighted the honorees with a special publication in September. The group was also celebrated at the foundation's 2023 Power of the Purse event in Little Rock.

Gorman, CEO of the foundation, hopes the list will inspire more women, businesses and leaders to "support and replicate change-making work."

"By sharing these stories in the Top 100 publication, we know that leaders across Arkansas will have the opportunity to learn the names of our state's trailblazing women and how they're affecting change," Gorman said.

Nachtmann Named Arkansas Research Alliance Fellow

Heather Nachtmann, professor of industrial engineering and the Earl J. and Lillian P. Dyess Endowed Chair in Engineering, has been named an Arkansas Research Alliance Fellow. The ARA Fellows program recognizes scientists and

engineers already resident at a university or institution in Arkansas for their ongoing, exemplary contributions to the state's core research focus areas with a $75,000 grant paid over three years. The program recognizes research leaders with an established history of impact and includes membership into the ARA Academy of Scholars and Fellows.

"For 23 years, Dr. Nachtmann has dedicated herself to the University of Arkansas, rising through the professorial ranks while assuming increasing levels of leadership positions," College of Engineering Dean Kim Needy said.

"She has established a renowned research program in logistics modeling and economic decision analysis and is a recognized intellectual leader in her field," Needy added. "Being named an ARA Fellow will accelerate her contributions to the state of Arkansas, giving us much to celebrate!"

Margaret Sova McCabe, interim vice chancellor for research and innovation, echoed Needy's appreciation: "Congratulations to Heather Nachtmann on this richly deserved honor. Dr. Nachtmann's work in advanced mobility, economics and operations analysis of inland waterways, and data science for transportation are recognized the world over and are driving innovation in Arkansas and beyond."

Nachtmann's research contributions to the state include economic impact and operational studies of the McClellan-Kerr Arkansas River Navigation System and the Ouachita River. She also serves on the leadership team of the Arkansas Economic Development Commission's Data Analytics that are Robust and Trusted (DART) Center while also leading advanced mobility efforts for the University of Arkansas.

"She has established a renowned research program in logistics modeling and economic decision analysis and is a recognized intellectual leader in her field."

-- Kim Needy, Dean

"I am honored to join the Arkansas Research Alliance Academy as an ARA Fellow and will continue working with stakeholders across Arkansas to drive innovation and economic impact in advanced mobility and future logistics," Nachtmann said. "Many thanks to Chancellor Charles Robinson, Dean Kim Needy, and the Arkansas Research Alliance Board of trustees for their nominations and selection to join this esteemed group of Arkansas researchers and inventors.

Nachtmann has published more than 100 peer-reviewed publications and generated more than $17 million in research grants as principal investigator. She serves as director of the Maritime Transportation Research and Education Center, a U.S. Department of Transportation University Transportation Center, and the Mack-Blackwell Transportation Center.

She is also a Fellow of the American Society for Engineering Management and the Institute of Industrial and Systems Engineers and is a member of both the Arkansas State Highway and Transportation Department Research Advisory Council and the National Science Foundation Engineering Research Visioning Alliance Standing Council. She also serves as editor in chief of *The Engineering Economist* journal.

Nachtmann received her bachelor's, master's and Ph.D. in industrial engineering from the University of Pittsburgh. She has been with the College of Engineering since 2000, starting as an assistant professor in the Department of Industrial Engineering.

Advancing Engineering Excellence: Highlights from ASEE's Annual Conference & Exposition

The American Society for Engineering Education recently hosted its Annual Conference & Exposition in Baltimore, Maryland, to celebrate excellence and innovation in the field of engineering education. From June 25 to 28, leading professionals, educators and researchers met to exchange knowledge and recognize outstanding achievements. Among the attendees were members of the Department of Industrial Engineering, who were recognized for their exceptional contributions and commitment to advancing engineering education.

Jena Asgarpoor, Engineering Management Division Program chair; Ed Pohl; Ekaterina Koromyslova, Engineering Management Division.

The newly appointed dean of the Graduate School and International Education, Ed Pohl, was the recipient of the Bernard R. Sarchet Award. This award is the highest award of the Engineering Management Division of the society and is given to recognize a lifetime achievement in engineering management education.

Named after one of the founding fathers of the academic discipline of engineering management, the award is given annually to an individual who has made significant contributions over an extended period to the discipline and the division and who exemplifies the highest standards of the professorate in engineering management.

Pohl joined U of A in 2004 as an associate professor of industrial engineering. From 2007 to 2014, he was the director Master of Science in Operations Management program, one of the largest graduate programs at the U of A. In 2010, he also became the director of the Master of Science in Engineering program. He served as the director of the Center for Innovation in Healthcare Logistics from 2013 to 2017, and he was promoted to full professor in 2013. He served as the head of the Department of Industrial Engineering from 2014 to 2023. In May 2023, Pohl was named dean of Graduate School and International Education.

Pohl received his Ph.D. in systems and industrial engineering from the University of Arizona. He holds an M.S. in systems engineering from the Air Force Institute of Technology, an M.S. in reliability engineering from the University of Arizona, an M.S. in engineering management from the University of Dayton and a B.S. in electrical engineering from Boston University.

Also honored at the conference Eric Specking, assistant dean of enrollment and retention for the College of Engineering, was the recipient of the Merl Baker Award. The award is given by the Engineering Management Division and recognizes exemplary service to the division.

The award is named for Merl Baker, who served as dean of the Missouri School of Mines and Metallurgy and first chancellor of the University of Missouri-Rolla (now Missouri University of Science and Technology). The annual award goes to a member who has provided significant service to the division.

Eric Specking

An alumnus of the Department of Industrial Engineering and the Department of Computer Science and Computer Engineering, Specking received his bachelor's, master's and doctoral degrees from the U of A.

Chase Rainwater, head of the Department of Industrial Engineering, said, "I want to thank Dr. Pohl and Dr. Specking for their ongoing commitment to engineering education. Dr. Pohl has demonstrated long-term leadership in engineering management, and our university has benefited from the way he has represented us for many years. Fortunately, Dr. Specking is clearly continuing our history of service leadership to this organization, and I look forward to seeing the results of his efforts for years to come."

Rossetti Honored with Distinguished Educator Award

Manuel Rossetti received the Albert G. Holzman Distinguished Educator Award from the Institute of Industrial and Systems Engineers. The award recognizes educators who contribute significantly to the industrial engineering profession through teaching, research, publication, extension, innovation or administration.

Rossetti's peers and colleagues recognize him for his achievements in teaching courses in computer simulation, inventory control, probability and statistics, database design, and transportation and logistics. He has been named outstanding teacher by the Department of Industrial Engineering, was voted best teacher by undergraduate students repeatedly, received the John

L. Imhoff College of Engineering Outstanding Teacher Award in 2011 and was elected a fellow of IISE in 2012. He received the Charles and Nadine Baum Teaching Award and was elected to the U of A Teaching Academy in 2013.

Ed Pohl, department head at the time the award was announced, said, "The Holzman award recognizes the top educators in the field of industrial engineering. Dr. Rossetti's accomplishments in the areas of teaching, research and innovation in teaching and learning are outstanding, and I am happy that he is being recognized for his contributions as an educator to our profession. I cannot think of a more deserving candidate for this honor."

Rossetti's primary research and teaching interests include the design, analysis and optimization of logistics, manufacturing, health care and transportation systems using computer simulation and operations research techniques. Rossetti said his mission is to be "a world-class scholar who promotes innovative teaching and research within an environment that values learning, hard work, intellectual curiosity and collaborative research."

Rossetti has been with the Department of Industrial Engineering since 1999. He is highly recognized for his work in the field of computer simulation modeling and analysis and is the author of the internationally used textbook *Simulation Modeling and Arena* published by John Wiley & Sons.

"The Holzman award recognizes educators who have contributed significantly to the profession through teaching, research and publication, extension, innovation, or administration. This holistic view of an educator has always been the cornerstone of my mission statement. I am extremely honored to join the ranks of those renowned educators that have previously received this award."

Manuel Rossetti was also one of four faculty members who completed all requirements for the Wally Cordes Teaching and Faculty Support Center's Peer Observation of Teaching Certificate. The Support Center's goal is to train peer observers to improve teaching, document effectiveness and create a community of practice.

The peer observation program consists of classroom instruction and performing two practice observations with others in the program. In addition, each participant has one of their own classes observed. The objective is to provide meaningful feedback on observed classroom practices. All peer observations are confidential, formative and conducted in a spirit of mutual respect. Completers of the program earn a certificate and are placed on the Teaching and Faculty Support Center's website and are available to make formative observations for any faculty member upon request.

Established in 1992, the Wally Cordes Teaching and Faculty Support Center serves as an interactive resource for faculty of the University of Arkansas to enhance teaching and learning.

Recent Alumnus and Industrial Engineering Faculty Receive Prestigious Awards

At the Reliability and Maintainability Symposium, held Jan. 23-26, 2023, alumnus Cesar Ruiz, assistant professor at the University of Oklahoma, along with faculty members Haitao Liao and Ed Pohl, were honored with the IISE 2022 William A. Golomski Award for their paper "Bayesian Design of a D-Optimal Accelerated Degradation Test Considering Random Effects." This award honors an outstanding paper from the Annual Reliability and Maintainability Symposium, which is authored or co-authored by a member of Quality Control and Reliability Engineering division of the Institute of Industrial and Systems Engineers.

Pohl and Liao were further honored with doctoral students Jose Azucena and Farid Hashemian for their paper "Applying Machine Learning Methods to Improve All-Terminal Network Reliability." They received the Stan Ofsthun Award. This award recognizes the best technical paper by a Society of Reliability Engineers student author or coauthor accepted for presentation at the conference.

Om Yadav, Joel Nachlas, Haitao Liao, Cesar Ruiz, Ed Pohl and David Coit

In addition to these two honors, Jose Azucena was presented with the Hans Reiche Scholarship given by the Society of Reliability Engineers to attend the annual Reliability and Maintainability Symposium, which was held in Orlando, Florida.

BOOK OF THE YEAR

In October of 2022, Chancellor Emeritus John White published a new book on leadership, *Why It Matters: Reflections on Practical Leadership*. The book draws on White's wealth of expertise acquired across a six-decade career as a corporate leader, chancellor, dean, educator, engineer and consultant to create a thorough and thought-provoking treatise on leadership.

Based in part on the course that he designed and taught, Leadership Practices and Principles, White's book weaves his personal story and observations on leadership philosophy from some of the nation's most respected corporate, military, political and nonprofit leaders.

After stepping down as chancellor of the University of Arkansas, White was encouraged by colleagues to offer a course on leadership. Though he'd been an engineering educator for 45 years and had never taught a course that wasn't based on equations, he was intrigued by the idea of sharing his leadership journey with students.

"Now this is one of my favorite books on leadership."

Matthew Waller, dean of the Sam M. Walton College of Business

For the next nine years, White taught Leadership Practices and Principles to seniors and graduate students from every discipline, introducing them to 15 guest leaders over the course of each semester and holding in-depth, frank and often emotional conversations about the challenges, joys, heartbreaks and diversity of approaches to successful leadership. The class contributed to White being awarded the Charles and Nadine Baum Faculty Teaching Award in 2017.

While reflecting on his own leadership journey, White recounts dozens of these conversations in his book. Drawing on numerous challenging leadership experiences while at the U of A, serving on six boards of

directors for publicly traded companies, Georgia Tech's engineering college, National Science Foundation's engineering directorate, and numerous professional associations, he provides practical guidance on navigating the leadership odyssey.

"I finished reading *Why It Matters* a couple of months ago, learned a lot and thoroughly enjoyed it," said Kim Needy, dean of the College of Engineering. "My favorite part of the book was Chapter 14 on *Final Reflections* where Dr. White brings together lessons learned from his six-plus decade career. I am grateful for the generations of students, both young and old, that he has inspired, especially me."

"One weekend, when I began reading this book, I had planned to read just a couple of chapters, but I kept going until I had read most of the book in a single day because I was enjoying it and learning important leadership lessons. Now this is one of my favorite books on leadership," said Matthew Waller, dean of the Sam M. Walton College of Business.

Ed Pohl, head of the Department of Industrial Engineering, at the time commented, "This book provides a great collection of practical leadership
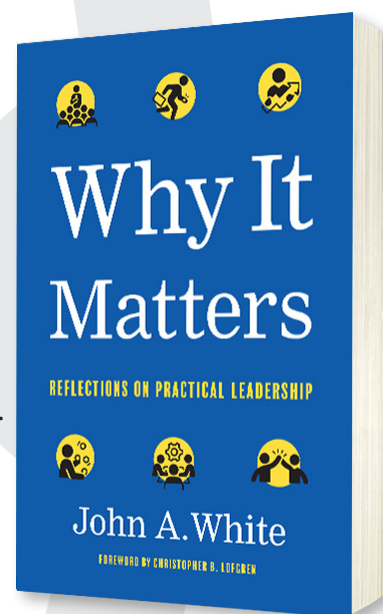
principles collected from a variety of leaders from industry, government and academia. A must read for all aspiring leaders."

The book was an instant success and well received, drawing numerous awards from Amazon.com including: Instant #1 New Release on Amazon in Corporate Governance, Amazon Bestseller in Leadership Training, Instant #8 New Release on Amazon in Business Mentoring & Coaching, Amazon Bestseller in Corporate Governance, Instant #2 New Release on Amazon in Leadership Training, Amazon Bestseller in Management Science, Instant #5 New Release in Project Management and Instant #3 New Release in Management Science.

In March of 2023, White received the Joint Publishers Book of the Year Award from the Institute of Industrial and Systems Engineers (IISE) for *Why It Matters*. This was

2023 Joint Publishers Book of the Year Award

GREENLEAF
BOOK GROUP
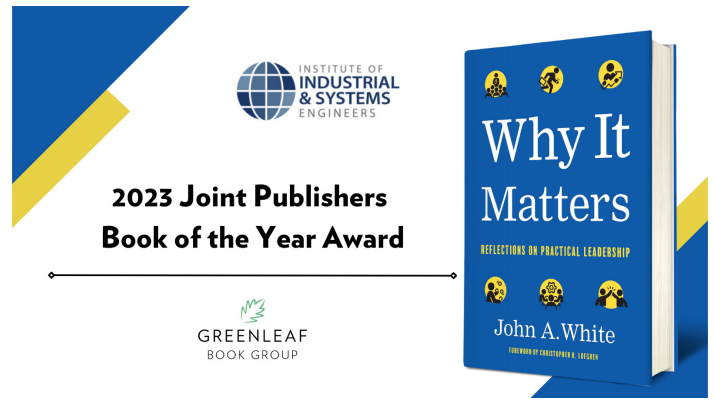
White's fourth Book of the Year award from IISE as he received the award in 1974, 1986 and 2015.

White received the award at the Annual IISE Conference & Expo 2023 in New Orleans, Louisiana in May.

FACULTY SERVICE

Cassady, Richard

- Ogden Best Paper Award Judge, Society of Reliability Engineers. (2019-Present)
- *Journal of Risk and Reliability*, Associate Editor, International. (2005-Present)

Chimka, Justin

- American Statistical Association Transportation Statistics Interest Group, Executive Committee Member. (2021-Present)
- *International Journal of Lean Six Sigma*, Editorial Board Member (2020-Present)
- *Quality Engineering*, Editorial Board Member. (2019-Present).
- *Stochastics and Quality Control*, Editorial Board Member. (2014-Present)

Crisel, Brandon

- First Lego League, Judge Advisor. (December 2022)
- Arkansas State Championship, First Tech Challenge Referee. (February 2022)
- FLL Razorback Invitational, First Lego League, Assistant Judge Advisor. (May 2022)
- Arkansas State Championship, First Lego League, Assistant Judge Advisor. (January 2022)

Ekşioğlu, Burak

- IISE Annual Meeting, Conference Co-Chair. (2022-2023)
- INFORMS Freight Special Interest Group, Vice-Chair. (2022-2023)
- INFORMS Annual Meeting, Cluster Chair. (2022-2023)
- Int'l. Program Committee of IN4PL, Committee Member/ Paper Reviewer. (2020-Present)
- IISE Annual Conference, Session Chair. (2005-Present)
- INFORMS Annual Meeting, Session Chair. (2001-Present)
- Pritsker Doctoral Dissertation Award, Committee Member. (Jan. 2021-Dec. 2023)

- INFORMS Prize for Teaching of OR/MS Practice, Committee Member. (2020-2022
- *IISE Transactions*, Associate Editor, International. (2017-Present)
- *International Journal of Engineering Business Management*, Editorial Board Member. (2013-Present)
- *The Scientific World Journal*, Editorial Board Member. (2013-Present)
- *Healthcare Management Science*, Editorial Board Member, International. (2019-Present)

Ekşioğlu, Sandra

- Energy, Natural Resources & the Environment, Section of INFORMS, President-Elect. (Oct. 2020-Oct. 2022)
- Women in Engineering Division, American Society for Engineering Education, Past-Chair. (July 2020-July 2022)
- Energy Systems Division of IISE, President. (May 2021-May 2022)
- Energy Systems Division of IISE, Immediate Past-President. (May 2022-May 2023)
- Transportation Science and Logistics (TSL) Society, Conference Chair. (July 2023)
- *Journal of Cleaner & Circular Bioeconomy*, Associate Editor, International. (2021-Present)
- *Journal of Cleaner Production*, Associate Editor. (2018-Present)
- *Optimization Letters*, Editorial Board Member. (2018-Present)
- *Journal of Energy Systems*, Editorial Board Member. (2013-Present)

English, John

- Arkansas Children's Research Institute, Board of Directors. (2022)
- John Brown University, Advisory Council. (2022)
- LeTourneau University, School of Engineering, Advisory Council. (2022)
- IISE Honors and Awards Committee, Member. (2022)

Liao, Haitao

- INFORMS QSR Student Best Poster Competition, Judge. (Oct 2022)
- IISE DAIS Best Student Paper Competition, Judge. (May 2022)
- IISE QCRE Track Best Student Paper Competition, Judge. (May 2022)
- IISE QCRE Track Best Paper Competition, Judge. (May 2022)
- IISE QCRE & Process Miner Industrial Data Challenge, Judge. (May 2022)
- *International Journal of Reliability and Safety*, Associate Editor. (2020-2022)
- *IISE Transactions on Quality and Reliability*, Associate Editor. (2017-Present)
- *RAMS*, Associate Editor. (2019-2022)

Liu, Xiao

- IISE, Data Analytics and Information Systems Division, President. (2022-2023)
- INFORMS, Quality, Statistics, and Reliability Section, Academic Committee, Member. (2022)
- INFORMS, Quality, Statistics, and Reliability Section, Research Committee, Member. (2022)
- IISE, Data Analytics and Information Systems Division, Data Analytics Competition Committee, Member. (2022)
- IEEE International Conference on Big Data, Program Committee, Member. (2022)
- IISE, Data Analytics and Information Systems Division, Teaching Award Committee, Member. (2022)
- *IISE Transactions on Data Sciences, Quality, and Reliability*, Associate Editor/Editorial Board Member. (Nov. 2022-Present)
- *International Journal of Reliability, Quality, and Safety Engineering*, Associate Editor/Editorial Board Member. (2020-Present)
- *Quality and Reliability Engineering International*, Associate Editor/Editorial Board Member. (2016-Present)
- *Experimental Design & Reliability, Quality & Reliability Engineering International*, Guest Editor – Special Issue. (2022)

Milburn, Ashlea

- IISE Annual Conference Healthcare Systems Engineering, Track Chairperson. (Aug. 2022-Present)
- Center for Childhood Obesity & Prevention, Senior Mentoring Subcommittee, Member. (2021-Present)
- IISE Scholarship Selection Committee, Member. (2021-Present)
- *INFORMS Transactions on Education*, Board Member. (2018-Present)
- Healthcare Systems Engineering Alliance, Treasurer. (2014-Present)
- *INFORMS Transactions on Education*, Associate Editor. (2018-Present)

Needy, Kim

- Arkansas Department of Education, Million Mentors Steering Committee. (2022-Present)
- Virginia Tech Industrial & Systems Engineering, Advisory Board Committee, Member. (2022-Present)
- United Way of Northwest Arkansas, Board of Directors; Chair of the Community Impact Committee. (2020-Present)
- American Society for Engineering Education, Engineering Deans Council. (2020-Present)
- American Society for Engineering Education, Engineering Deans Council, Public Policy Committee. (2021-Present)

Parnell, Greg

- Society of Decision Professionals, Hero Awards Committee, Member. (Jan. 2022-Present)
- INFORMS Steinhardt Awards Committee, Member. (Mar. 2021-Present)
- National Academies of Science, Engineering, & Medicine, Committee on Risk Analysis for Nuclear War & Nuclear Terrorism, Member. (Jan. 2021-Present)
- INCOSE Honors and Awards Committee, Member. (Feb. 2020-Present)
- Council of Engineering Management Academic Leaders, Committee Member. (Sept. 2017-Present)
- INCOSE Decision Analysis Working Group, Co-Chair. (Jan. 2017-Present)
- INCOSE International Symposium, Conference Paper Reviewer. (Dec. 2014-Present)
- INCOSE Corporate Advisory Board, Board of Advisors. (2014-Present)
- INCOSE Academic Council, Committee Member. (Jan 2014-Present)
- *Body of Knowledge & Curriculum to Advance Systems Engineering*, Editorial Committee, Member. (2013-Present)
- Conference on Systems Engineering Research 2023, Program Committee, Member. (Dec. 2022-Mar 2023)
- INCOSE Nominations and Elections Committee, Member. (Jan. 2021-Jan. 2023)
- INCOSE Fellows Committee, Chair. (Dec. 2020-Nov. 2022)
- Decision Analysis Society Ramsey Medal Committee, Member. (Sept. 2022-Oct. 2022)
- INCOSE Professional Development Portal Task Team Committee, Member. (Apr. 2020-June 2022)
- West Point, Department of Systems Engineering, Advisory Board, Member. (Apr. 2014-Apr. 2022)
- *Decision and Risk Analysis*, Wiley Series in Operations Research & Management Science. Advisory Editor. (2012-Present)
- *Decision Analysis Journal*, Editorial Board, Member. (2009-Present)

Pohl, Ed

- Oklahoma State University, Department of Industrial Engineering, Advisory Board, Member. (2019-Present)
- *IEEE Transactions on Reliability*, Associate Editor. (2014-Present)

- *IEEE Transactions on Engineering Management*, Editorial Board. (2018-Present)
- *Journal of Military Operations Research*, Editor. (2022-Present)
- Reliability and Maintainability Symposium, Board of Directors. (2014-Present)
- *Systems Journal*, Editorial Board. (2018-Present)
- *Journal of Risk and Reliability*, Associate Editor. (2005-Present)
- *Quality Technology & Quantitative Management*, Associate Editor. (2012-Present)
- *Journal of Critical Infrastructure Policy*, Editorial Board. (2019-Present)
- INFORMS Selects Committee, Member. (2014-Present)
- ASEM Student Scholarship Committee, Member. (2018-Present)
- ASEE National Engineering Economy Teaching Excellence Award Committee, Member. (2017-Present)

Pohl, Tish

- American Society for Engineering Education, Industrial Engineering Division Director. (2018-Present)

Rainwater, Chase

- FIRST Tech Challenge Arkansas, Organizing Committee, Member. (2018-Present)
- FIRST Arkansas Lego League, Organizing Committee, Member & AV Lead. (2017-Present)
- Don Tyson School of Innovation Robotics Team, FIRST Robotics, COE Mentor. (2015-Present)

Rossetti, Manuel

- Winter Simulation Conference 2024, Chair. (2020-Present)
- Small Business Innovation Research Program, Information Technology Applications, NSF Panelist. (2006-Present)
- Winter Simulation Conference, Session Chair. (2004-Present)
- *International Journal of Modeling and Simulation*, Associate Editor. (2000-Present)
- *Journal of Defense Analytics and Logistics*, Editorial Advisory Board. (2016-Present)

Schubert, Karl

- LeapXL, Board of Advisors. (Aug. 2022-Present)
- *Data Analytics for Good Journal*, Board of Directors. (Nov. 2021-Present)
- National Association of Multicultural Engineering Program Advocates, Board of Directors. (Sept. 2021-Present)
- The Carpentries Equity Council, Committee Member. (Sept. 2021-Present)
- Arkansas Science Research Institute, Committee Member. (Mar. 2021-Present)

- Northwest Arkansas Product Management Guild, Board of Directors. (2020-Present)
- NWA Council's Workforce Development Working Group, UofA Representative. (2019-Present)
- National Association of Multicultural Engineering Program Advocates – Sponsored Carpentries "R and Data Management" Workshop, Workshop Organizer. (Jan. 2022-Feb. 2022)

Specking, Eric

- INCOSE Empowering Women Leaders in Systems Engineering, Connecting with Academia, Co-Lead. (2018-Present)
- OzarkSTEM, Committee Member. (2017-Present)
- Bentonville Public School's Project, Lead the Way, Advisory Board. (2010-Present)
- Fayetteville Public School's Project, Lead the Way, Advisory Board. (2010-Present)
- Springdale Public School's Project, Lead the Way, Advisory Board. (2010-Present)
- ASEE Engineering Management Division, Committee Chair. (2022-2023)
- ASEE Engineering Management Division, Program Coordinator. (2021-2022)
- INFORMS Decision Analysis Society, Cluster Co-Chair. (2020-2022)
- ASEE P-12 Engineering Education Committee, Member. (2018-2022)

Sullivan, Kelly

- IISE Annual Conference and Expo, Operations Research Track, Track Co-Chair. (Sept. 2022-May 2023)
- Office of Naval Research, White Paper Reviewer. (July 2022)
- *INFORMS Journal on Computing*, Associate Editor. (Jan. 2019-Present)

Vazquez, Alan

- *Quality Engineering*, Editorial Board, Member. (Oct. 2022-Present)

Zhang, Shengfan

- INFORMS Committee on Diversity, Equity, and Inclusion, Member. (2022)
- IISE Annual Conference, Health Systems Track, Primary Track Co-Chair. (2022)
- INFORMS Minority Issues Forum Poster Competition, Judge. (Sept. 2022)
- *Health Systems*, Area Editor. (2015-Present)
- *IISE Transactions on Healthcare Systems Engineering*, Associate Editor. (2020-Present)

Department Fellows

The title Fellow is used to describe the highest level of membership in most professional societies. Requirements to achieve the level of Fellow vary among organizations. Fellows are typically nominated by other Fellows, have demonstrated exceptional achievement in their field and devoted service to the organization. The Industrial Engineering Department proudly recognizes faculty who have achieved this prestigious status.

American Society for Engineering Education

Kim Needy

John White

American Society for Engineering Management

Kim Needy

Heather Nachtmann

Edward A. Pohl

Institute of Industrial & Systems Engineers

Richard Cassady

Sandra Ekşioğlu

John English

Haitao Liao

Heather Nachtmann

Kim Needy

Edward A. Pohl

Chase Rainwater

Manuel Rossetti

John White

Institute for Operations Research and the Management Sciences

Greg Parnell

John White

International Council on Systems Engineering

Greg Parnell

Lean Systems Society

Greg Parnell

National Academy of Engineering

John White

Military Operations Research Society

Greg Parnell

Society for Decision Professionals

Greg Parnell

Society of Reliability Engineers

Richard Cassady

Edward A. Pohl

NEW FACULTY

The Department of Industrial Engineering is excited to announce the addition of five new members to its award-winning faculty. With a commitment to advancing knowledge and innovation in the field, these new faculty members bring a wealth of expertise and fresh perspective that will undoubtedly enrich the department's academic environment.

Haoming Shen

Shen joins the department as an assistant professor. He holds a Ph.D. in industrial and operations engineering, a master's degree in mathematics, and a master's degree in electrical and computer engineering from the University of Michigan, Ann Arbor. Prior to his graduate studies, he earned a bachelor's degree in electrical engineering from Xi'an Jiaotong University. Haoming actively engages in diversity, equity and inclusion events and received the Rackham Professional Development DEI Certificate.
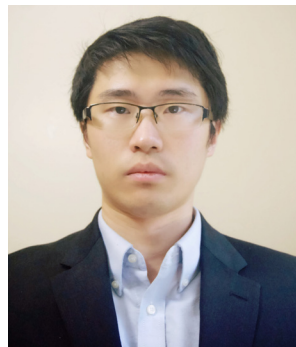
His research focuses on data-driven decision making under uncertainty and its applications in power grids, transportation systems and robotics. By leveraging limited information in data, he uses tools from stochastic optimization and integer programming to study how to make well-informed and strategic decisions in complex and uncertain environments. Haoming has received the Rackham Engineering Graduate Fellowship and his research was recognized with an honorable mention in the 2022 INFORMS Optimization Society Best Student Paper Competition.

Rob Curry

An alumnus of the department, Curry joins the department as an assistant professor. He received his Ph.D. in industrial engineering from Clemson University, his master's in industrial and systems engineering from the University of Florida, and his bachelor's in industrial engineering from the University of Arkansas. Before joining U of A, he was an assistant professor in the mathematics department at the United States Naval Academy for the past five years.

Curry's research involves methodology for modeling and solving large-scale network optimization models having applications in defense settings, sensor networks and cyber-physical infrastructure settings. His work has been published in high-quality journals, such as *IISE Transactions*, *Networks* and *Naval Research Logistics*, and his research has been sponsored by the Office of Naval Research. His teaching experience and interests lie in linear and integer programming, network optimization modeling and algorithms, and applied probability and statistics.

Alice Squires

Squires joined the department in May as a teaching professor contributing to the Master of Science in Engineering Management and Operations Management programs. She received her Ph.D. from Stevens Institute of Technology, and she holds an MBA from George Mason University and a B.S. in electrical engineering

from the University of Maryland.

She has served as author, editor, manager, professor and systems engineer with 40 years of combined experience in industry and academia. Squires is the founder of the INCOSE's Empowering Women Leaders in Systems Engineering Initiative (see incose.org/EWLSE). She is an INCOSE Expert Systems Engineering Practitioner with Acquisition, a PMI Project Management Professional, and an ASEM Certified Professional Engineering Manager. IEEE-USA published her e-book *Dandelion Wishes: A World Where We Collaborate as Equals* (Book 21) in 2018 that describes her engineering journey.

Squires was co-editor and co-author of the 2019 INCOSE *Insight Diversity in Systems Engineering* themed edition, the 2022 INCOSE published *Letters to My Younger Self: How Systems Engineering Changed My Life* e-book and the 2022 Springer *Emerging Trends in Systems Engineering Leadership: Practical Research from Women Leaders* book.

Kerry Melton

Melton joined the department as a teaching associate professor. He received his Ph.D. in industrial engineering and management from Oklahoma State University. Before joining the University of Arkansas, he was an adjunct professor for the supply chain department and operations management program at the University of Arkansas. He also worked in industry for 25 years at J.B. Hunt Transport, Walmart Inc. and FM Corporation.

Melton's teaching experience is in operations management, forecasting and inventory analytics, supply chain and transportation strategies, engineering economic analysis, engineering statistics, manufacturing processes and data analytics. His research area is in supply chain management focusing on transportation and logistics systems. More specifically, he investigates how to plan and develop more cost-efficient methods to improve distribution networks using heuristics and mixed integer programming. His research is featured in the *International Journal of Applied Industrial Engineering* and the *International Journal of Supply Chain Management*.

David Paulus

Paulus joins the department as a professor of practice. For the past nine years he has been a clinical associate professor in engineering and technology management at Washington State University. For the previous ten years he was an associate professor in mechanical engineering at the University of Arkansas – Fort Smith. He received his Ph.D. in mechanical engineering from Colorado State University, and both an M.S. in industrial engineering and a B.S. in mechanical engineering from the University of Tennessee. He is a Professional Engineer in the state of Arkansas, a Certified Professional in Engineering Management, and a Certified Human Factors Engineering Professional.

ACTIVE GRANTS

Hernandez, S. and **J. R. Chimka**, "Seat belt, motorcycle helmet and child restraint survey," Sponsored by Arkansas State Police, $239,689. (2021 – 2023).

Ekşioğlu, S. D., "Integrated Process Optimization for Biochemical Conversion," Sponsored by U.S. Department of Energy, Federal, $1,947,383 (April 1, 2018 -Aug 15, 2022).

Liao, H., E. A. Pohl, X. Liu, Y. Zhao, R. A. McCann and X. Wu, "RII Track-2 FEC: Artificial Intelligence on Sustainable Energy Infrastructure Network (AI SUSTEIN) and Beyond towards Industries of the Future," Sponsored by National Science Foundation, Federal, $1,450,003 – Arkansas share. (2021 – 2025).

Liu, X., "From Black-Box to Next-Generation Domain-Aware Data Science – Machine-Learning-Based Investigation of Aircraft-UAS Collision Harnessing the Convergence of Engineering, Computer Science and Mathematics," Chancellor's Innovation and Collaboration Fund, $201,315. (2021).

Liu, X., "AccelNet-Design: International Networks Towards Future U.S. Urban Systems Resilience (Resilient-NET)," National Science Foundation, $249,905 (2022-2024).

Liu, X., "CAREER: Domain-Aware Statistical Learning---Harnessing the Convergence of Engineering Knowledge and Data Science," National Science Foundation, $500,176 (2022-2027).

Milburn, A. B., "CAREER: Information Accuracy and the Use of Social Data in Planning for Disaster Response," Sponsored by National Science Foundation, Federal, $500,000. (2016 – 2023).

Milburn, A. B., "NSF INTERN Supplemental Funding for CMMI 1554412 CAREER: Information Accuracy and....for Disaster Response," Sponsored by National Science Foundation, Federal, $40,056 (2020 – 2021).

Milburn, A. B., "ACRI -Weber Center for Childhood Obesity Prevention - UAF Senior Milburn Mentor," Sponsored by Arkansas Children's Hospital Research Institute, State, $13,673. (2022 – 2023).

Milburn, A. B., "Convergence Accelerator (Track J): Convergence Towards a Disaster Resilient Food System," Sponsored by National Science Foundation, Federal, $54,648. (2022 – 2023).

Nachtmann, H. L., , J. R. Chimka, C. E. Rainwater and J. D. Cothren, "Transportation and Maritime Analytics Partnerships Hub (TransMap)," Sponsored by U.S. Department of Transportation, Federal, $1,500,000. (2019 – 2022).

Nachtmann, H. L., R. Ham, "Smart Mobility Planning Grant," Sponsored by The Walton Family Charitable Support Foundation, Private, $412,000 (2022-2023).

Parnell, G. S., E. A. Pohl and E. Specking, "BAA Proposal," Sponsored by U.S Army Corps of Engineers, $450,000. (2022-2024).

Pohl, E. A., K. M. Sullivan and H. Liao, "Science of Test Research Consortium," Sponsored by Macaulay-Brown, Inc., Industry, $551,000. (2018 – 2022).

Pohl, E. A., Bob Beitle, C. Sides, National Science Foundation, $249,792, "I-Corps Commercialization STEP (STEM Training in Entrepreneurship Practices)," 2017-2022

Cothren, J. D., **C. E. Rainwater**, H. L. Nachtmann, A. R. Milburn, A. Zajicek, D. J. Adams, J. R. Chimka, J. Zhan, K. Luu, H. Liao, L. Zhang, Q. Li, X. Liu, K. D. Schubert, S. Zhang, T. H. N. Le, X. Wu, X. Liu, S. Yang, Z. Sha, "EPSCoR Track 1 Data Science | Data Analytics that are Robust and Trusted (DART): From Smart Curation to Socially Aware Decision Making," Sponsored by Arkansas Economic Development Commission, State, $621,897 year 3. (2020 – 2025).

Cothren, J. D., C. C. Angel, **C. E. Rainwater**, S. A. Warn and H. Theiss, "Photogrammetry Services, Task Order for CY2022," Sponsored by Sandia National Labs, Federal, $1,050,000.00. (December 10, 2021).

Di, J., B. N. Panda, **C. E. Rainwater**, D. R. Thompson and H. A. Mantooth, "Cyber-Centric Multidisciplinary Security Workforce Development," Sponsored by National Science Foundation, Federal, $4,634,626.00. (2019 – 2024).

Rainwater, C. E., Y. Li, J. L. Kent, J. Zhao, M. C. Lacity, C. Maxwell and E. A. Pohl, "Improving Food Safety of Pork Supply Chain," Sponsored by Walmart Foundation, $3,200,000.00. (2020 – 2022).

Li, Y., **C. E. Rainwater**, J. L. Kent, M. C. Lacity and M. T. Kidd, "Poultry Excellence in China: Improving Food Safety in Poultry Supply Chain (Phase II)," Sponsored by Walmart Foundation, $3,500,000.00. (2019 – 2021).

Rainwater, C. E., W. Chaovalitwongse and J. D. Cothren, "Artificial Intelligence in Air Force Acquisition," Sponsored by KBR Wyle, Industry, $152,945.14. (2018 – 2022).

Rainwater, C. E., B. D. Williams, J. Chimka, A. Milburn, G. Parnell and E. Specking, "J.B. Hunt Innovation Center of Excellence," Sponsored by J.B. Hunt Transport Services, Inc., Industry, $2,500,000. (2017 – 2022).

Rossetti, M. D., B. W. Hill, E. A. Pohl, R. L. Turner, X. Wu, A. J. Alverson, W. Chaovalitwongse, C. T. Harris, C. R. Cassady, W. F. Limp, J. R. Tipton, R. R. Rao and W. -J. Lo, "Multidisciplinary Data Science (MDaS) to Better Prepare STEM Students with Emerging Data Science Skills," Sponsored by National Science Foundation, Federal, $1,000,000. (2019 – 2024).

Rossetti, M. D., "CELDi DLA Membership," Sponsored by Defense Logistics Agency, Federal, $80,000.00, 2022-2023.

Schubert, K. D., C. S. Gattis, J. S. Popp, T. Carter III, C. Cao and G. Gunderman, "Innovation Training and Scholarships To Improve Student Retention and Graduation in STEM Fields," Sponsored by National Science Foundation, Federal, $999,864. (2021 – 2026).

This wild boar statue and fountain is a replica of the original Il Porcellino in Florence, Italy. The Italian title, which means, "piglet," comes from the local Florentine nickname for the statue. This is one of many Razorback tributes on campus. The statue is located on the lawn of the University House on Maple Street.

FEATURED PUBLICATIONS

In 2022, the faculty of the Department of Industrial Engineering at the University of Arkansas contributed one book, one book chapter, 30 refereed journal articles and 10 other refereed publications and proceedings. The faculty authors are indicated in bold.

Book Edited

Ekşioğlu, S. D., Y. Wei and S. Siddique (Eds.), *Optimization in Natural Resources, Environment, and Sustainability Optimization Letters*, 2022.

Book Chapter

Ekşioğlu, S. D., Z. Azadi, (2022). "Customer Interfaces: Predicting, Planning and Influencing Demand". *Maynard's Industrial Engineering Handbook*, McGraw-Hill, 2022.

Refereed Journal Articles

Kiani, M., **B. Ekşioğlu**, T. Isik, A. Thomas and J. Gilpin. "Evaluating Appointment Postponement in Scheduling Patients at A Diagnostic Clinic." *Naval Research Logistics*, Vol. 69, Issue 1 (2022): 76-91

Liu, D., **B. Ekşioğlu**, M. Schmid, N. Huynh and G. Comert. "Optimizing energy savings for a fleet of commercial autonomous trucks." *IEEE Transactions*, Vol. 23, Issue 7 (2022)

Chang, Y., Y. Song and **B. Ekşioğlu**. "A stochastic lookahead approach for hurricane relief logistics operations planning under uncertainty." *Annals of Operations Research*, Vol. 319 (2022): 1231-1263

Cengil, M.F., H. Nagarajan, R. Bent, **S. D. Ekşioğlu** and B. Ekşioğlu. "Learning to accelerate globally optimal solutions to the AC optimal power flow problem." *Electric Power Systems Research*, Vol. 212 (2022)

Kucuksayacigil, F., M.D. Roni, **S. D. Ekşioğlu** and Q. Chen. "Optimal Control to Handle Variations in Biomass Feedstock Characteristics and Reactor In-Feed Rate." *International Journal of Energy*, Vol. 248 (2022)

Aboytes-Ojeda, M., K. Castillo and **S. D. Ekşioğlu**. "Modeling and Optimization of Biomass Quality Variability for Decision Support Systems in Biofuel Production." *Annals of Operations Research*, Vol. 314 (2022): 319-346

Liu, D., **S. D. Ekşioğlu** and M. Roni. "Optimal Control of Biomass Feedstock Processing System Under Uncertainty in Biomass Quality." *IEEE Transactions on Automation Science and Engineering*, Vol. 19, Issue 3 (2022): 1645-1661

Gulcan, B., **S. D. Ekşioğlu**, Y. Song and M.D. Roni. "Optimization Model for Integrated Biorefinery Operations." *Optimization Letters*, Vol. 16, Issue 3 (2022): 909-951

Ma, Z., S. Nie and **H. Liao**. "A Load Spectra Design Method for Multi-stress Accelerated Testing." *Proceedings of the Institution of Mechanical Engineers, Part O, Journal of Risk and Reliability*, Vol. 236 (2022)

Alkhaleel, B., **H. Liao** and K. Sullivan. "Model and Solution Method for Mean-risk Cost-based Post-disruption Restoration of Interdependent Critical Infrastructure Networks." *Computers and Operations Research*, Vol. 144 (2022): 105812

Cheng, Y., Y. Wei and **H. Liao**. "Optimal Sampling-based Sequential Inspection and Maintenance Plans for a Heterogeneous Product with Competing Failure Modes." *Reliability Engineering System Safety*, Vol. 218 (2022): Article: 108181

Alkhaleel, B., **H. Liao** and K. Sullivan. "Risk and Resilience-based Optimal Post-disruption Restoration for Critical Infrastructures under Uncertainty." *European Journal of Operational Research*, Vol. 296 (2022): 174-202

Ma, Z., Y. Geng, S. Nie, H. Ji, X. Yan and **H. Liao**. "SNIF-DFA: A Signal Processing and Information Fusion Method for Smart Gua Sha Device." *IEEE Sensors Journal*, Vol. 22, Issue 24 (2022): 24176-24185

Wang, H., **H. Liao** and X. Ma. "Stochastic Multi-phase Modeling and System Health Assessment Based on a Degradation Branching Process." *Reliability Engineering System Safety*, Vol. 222 (2022): 108412

Liu, J., **H. Liao** and J. White. "Technical Note: A Graphical Approach to the Analysis of Travel Time in an Automated Storage and Retrieval System." *Naval Research Logistics*, Vol. 69 (2022): 914-923

Jin, Y., C. Ruiz, C. and **H. Liao**. "A Simulation Framework for Optimizing Bike Rebalancing and Maintenance in Large-Scale Bike-Sharing Systems." *Simulation Modelling Practice and Theory*, Vol. 115 (2022): 102422

Liu, X., K.M. Yeo and S.Y. Lu. "Statistical Modeling for Spatio-Temporal Data from Physical Convection-Diffusion Processes." *Journal of the American Statistical Association*, Vol. 117 (2022): 1482-1499

Liu, X. and X.C. Liu. "Regression Trees on Grassmann Manifold for Adapting Reduced-Order Models." *Journal of the American Institute of Aeronautics and Astronautics* (AIAA), (2022): Online

Hajiha, M., **X. Liu**, Y. Lee and R. Moghaddass. "A Physics-Regularized Data-Driven Approach for Health Prognostics of Complex Engineered Systems with Dependent Health States." *Reliability Engineering and System Safety*, Special Issue: *Physics-Informed Machine Learning for Reliability and Safety*, Vol. 226, (2022): 108677

Iranzad, R., **X. Liu**, W. A. Chaovalitwongse, D. S. Hippe, S. Wang, J. Han, P. Thammasorn, C.Y. Duan, J. Zeng and S.R. Bowen. "Boost-S: Gradient Boosted Trees for Spatial Data and Its Application to FDG-PET Imaging Data." *IISE Transactions on Healthcare Systems Engineering*, Vol. 12 (2022): 165-179

Forouzannezhad, P., D. Maes, D. Hippe, P. Thammasorn, R. Iranzad, J. Han, C. Duan, **X. Liu**, S. Wang, W. Chaovalitwongse, J. Zeng and S. Bowen. "Multitask Learning Radiomics on Longitudinal Imaging to Predict Survival Outcomes following Risk-Adaptive Chemoradiation for Non-Small Cell Lung Cancer." *Cancers*, Special Issue: *Medical Imaging and Machine Learning*, Vol. 14 (2022): 1288

Ayers, B.L., C. Bogulski, **A.B. Milburn**, A. Fisher, M. Netwon and P. McElfish. "Dietary Practices during Pregnancy in a Marshallese Community: A Mixed-Methods Analysis." *International Journal of Environmental Research and Public Health*, Vol. 19, No. 11 (2022): 6360

Assaad, R., I. El-adaway, M. Hastak and **K.L. Needy**. "The impact of offsite construction on the workforce: Required skillset and prioritization of training needs." *Journal of Construction Engineering and Management*, Vol. 148, No. 7 (2022)

Assaad, R., I. El-adaway, M. Hastak and **K.L. Needy**. "The COVID-19 pandemic: A catalyst and accelerator for offsite construction technologies." *ASCE Journal of Management in Engineering*, Vol. 38, No. 6 (2022)

Assaad, R., I. El-adaway, M. Hastak and **K.L. Needy**. "Quantification of the state of practice of offsite construction: Current trends and future prospects." *Journal of Construction Engineering and Management*, Vol. 148, No. 7 (2022)

Jensen, J., G. Mathews, **G.S. Parnell** and E. Pohl. "Preference Mapping and Routing of Illicit Cross-Border Activity." *Military Operations Research*, Vol. 27, No. 3 (2022): 23-33

Barker, T., **G.S. Parnell**, E. Pohl, E. Specking, S.R. Goerger and R. Buchanan. "Impact of Reliability in Conceptual Design—An Illustrative Trade-Off Analysis." *Systems*, Vol. 10, No. 6 (2022)

Jalata, I., T.-D. Truong, **C.E. Rainwater** and K. Luu. "EQAdap: Equipollent Domain Adaptation Approach to Image Deblurring." *IEEE Access*, Vol. 10 (2022): 93203-93211

Specking, E., G.S. Parnell, E.A. Pohl and R. Buchanan. "Engineering Resilient Systems: Achieving Stakeholder Value Through Design Principles and System Operations." *IEEE Transactions on Engineering Management*, Vol. 69, No. 6 (2022): 3982-3993

Schoen, E.D., P.T. Eendebak, **A.R. Vazquez** and P. Goos. "Systematic enumeration of definitive screening designs." *Statistics and Computing*, Vol. 32, No. 6 (2022): 109

Conference Proceedings

Galbraith, A., **B.L. Crisel**, L.B. Massey and H.A. Schluterman. "Exploring the relationship between initial mathematics course in college and engineering graduation rates." *ASEE Annual Conference & Exposition Proceedings*, Minneapolis, Minnesota, June 2022.

Cengil, M.F., H. Nagarajan, R. Bent, **S.D. Ekşioğlu** and B. Ekşioğlu. "Learning to accelerate globally optimal solutions to the AC optimal power flow problem." *22nd Power Systems Computation Conference Proceedings*, Porto, Portugal, June/July 2022.

Bui, H., **S.D. Ekşioğlu**, S. Nurre and R. Proano. "An analysis of the impacts of social media on COVID-19 vaccine hesitancy in the U.S." *Proceedings of the Institute of Industrial and Systems Engineers Annual Conference*, Seattle, Washington, May 2022.

Azucena, J., H. Wells, **H. Liao**, K. Sullivan and E. Pohl. "Applying Machine Learning Methods to Improve All-Terminal Network Reliability." *Proceedings of the 60th European Safety, Reliability, & Data Association (ESReDA) Seminar*, Grenoble, France, May 2022.

Azuzena, J.C.H., H. Wells, **H. Liao**, K.M. Sullivan and E.A. Pohl. "Applying Deep Reinforcement Learning to Improve the Reliability of an Infrastructure Network." *Proceedings of the 60th European Safety, Reliability, & Data Association (ESReDA) Seminar*, Grenoble, France, May 2022.

Rivera, R., **G.S. Parnell**, E.A. Pohl, E. Specking, R. Buchanan and J. Richards. "Smart Base Installations: Bayesian Network for Decision Analysis to Support the Decision-Making Process During Severe Weather Events." *11th Southeast Symposium on Contemporary Engineering Topics – INFORMS Proceedings*, Little Rock, Arkansas, September 2022.

Parnell, G., R. Kenley, E. Specking and E.A. Pohl. "Systems Engineering and Industrial Engineering." *Proceedings of the 32nd Annual INCOSE International Symposium*, Detroit, Michigan, June 2022.

Ruiz, C., **E. Pohl** and H. Liao. "Bayesian Design of a D-Optimal Accelerated Degradation Test Considering Random Effects." *Proceedings of the 68th Annual Reliability and Maintainability Symposium*, Tucson, Arizona, January 2022.

Rossetti, M. D. "An Overview of the Multi-Disciplinary Data Science (MDaS) S-STEM Scholarship Program." *Proceedings of the ASEE Annual Conference & Exposition*, Minneapolis, Minnesota, June 2022.

Schubert, K., X. Delgado Solorzano, L. Massey, C. Gattis, J. Popp, C. Cao, T. Carter and D. Muralidhara. "A Successful 2-week Innovation- and Student Success-Focused Bridge Program for First-Year Students." *Proceedings of the ASEE Annual Conference & Exposition*, Minneapolis, Minnesota, June 2022.

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:

- Successfully apply core industrial engineering knowledge and skills for industrial or public sector organizations,

- Successfully pursue advanced professional degrees, graduate studies in industrial engineering, professional training, or engineering certification and

- 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 mathematics, science, English, economics, accounting, social sciences, humanities and fine arts. University Professor, Richard Cassady, serves as the Chair of the Industrial Engineering Undergraduate Studies Committee.

Students enter our program in their second year, as all first-year College of Engineering students participate in the First-Year Engineering Program. The First-Year Engineering Program includes two semesters of academic coursework, peer mentoring, professional development, academic advising and academic coaching.

Since the First-Year Engineering Program was implemented in 2007, second-year retention (within the College of Engineering) of First-Year Engineering students has increased from approximately 60% to approximately 70%. Roughly 8% of retained First-Year Engineering students choose industrial engineering for their College of Engineering major.

More information on the undergraduate program can be found here:

Industrial Engineering Seniors Claim Scholarships from Alpha Pi Mu

Valerie Jackson received the 2022-23 Alpha Pi Mu Scholarship. Jackson also completed a Spanish minor. She served as the secretary for Alpha Pi Mu her junior year and served as president of Alpha Pi Mu her senior year. Jackson served as the recording secretary for Tau Beta Pi as well. She was actively engaged on campus throughout her college career, working as vice president of internal affairs for the Kappa Kappa Gamma sorority and as a part of the Associated Student Government where she continued to serve on the Office of Financial Affairs board. Valerie is very involved in her community and mentors a group of ninth grade girls at Fellowship Bible Church, meeting weekly.

Jackson completed her honors research thesis and was the recipient of a SURF Grant over 2023. In summer 2021, she studied Spanish language studies in Madrid, Spain, and in summer of 2022, she returned to Europe to study engineering economics in Rome. In summer 2023, she worked as an associate consultant intern at Mastercard and began her master's degree in industrial engineering at the U of A in fall 2023.

Senior Jessica Creech also received a scholarship from Alpha Pi Mu, the 2022-23 John L. Imhoff Globalization Scholarship. Imhoff is recognized as one of the pioneers of modern industrial engineering education and the first department head of the Department of Industrial Engineering at the U of A. Imhoff was a believer in the contributions industrial engineering could make around the globe and was also a strong supporter of Alpha Pi Mu.

A senior from Southlake, Texas, Creech has been very active on campus as a member of the Society of Women Engineers and Tau Beta Pi. A member of Alpha Pi Mu, she served as the media chair and is a member of the Institute of Industrial and Systems Engineers. Over the past four semesters, she has been working as an undergraduate research assistant focused on statistical data analysis. Creech also completed her honors thesis and graduated with honors in spring 2023.

Tate Hansenclever received the 2022-23 Alpha Pi Mu Scholarship. Hansenclever is from Bentonville, Arkansas. His interest in engineering began in high school, and he chose to pursue industrial engineering before graduation. He served as vice president of Alpha Pi Mu and was a member of Tau Beta Pi. He served as the scholarship chair for the Phi Delta Theta fraternity overseeing scholarship disbursement and academic success of new members. Hasenclever completed internships with FedEx supply chain working with their project engineering team in the field of facility logistics and with J.B. Hunt working with their data insights group. He began employment with CapSpire after graduation in spring 2023.
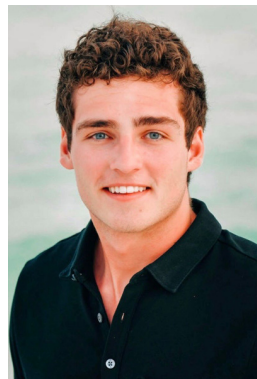
Undergraduate Students in Spotlight at IISE Conference in May 2023

Industrial engineering students and faculty received a variety of honors at the annual conference of the Institute of Industrial and Systems Engineers held May 20-24 in New Orleans.

Paris Joslin took part in the IISE Capstone Competition. Joslin served as leader for her capstone team, which included members Nathan Skinner, Will Cunningham, Conner Oxford and Zach Leondike.

Their project, "A Decision Support Tool to Automate and Optimize Contract Staffing using Linear Programming," for Infinity Labs LLC, received the Project of the Year Award at the departmental 2023 Capstone Symposium. Joslin was also interviewed by the IISE podcast *Problem Solved* about her project during the conference.
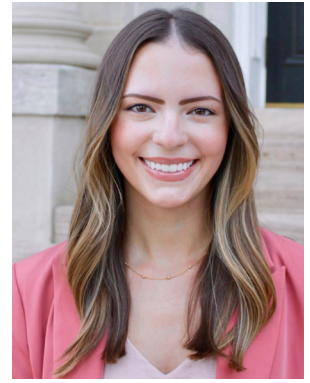
The team was able to automate & optimize the current staffing process for Infinity Labs, resulting in a 17.3% increase in employee utilization. Their tool saved the company 5.9 hours per week, which is a 56.7% improvement in efficiency. The result led to an increased stakeholder satisfaction of 43.3%!

Senior, Blake Sooter received the Operations Research Division Undergraduate Student Research Dissemination Award for his paper titled "Open-Source Optimization of Green Last Mile Delivery Systems." Blake is advised by Chase Rainwater.

Scholarships

Five industrial engineering undergraduate students received scholarships from IISE this year. Karleigh Eoff received the Dwight D. Gardner Scholarship. Gabe Hesington was the recipient of the Marvin Mundel Scholarship. Three students received the Harold and Inge Marcus scholarship: Katie Augsburger, John Maxwell and Cesar Trujillo. Ashlea Milburn coordinates the IISE scholarship nomination process.

Student Awards Banquet

The Department of Industrial Engineering recognizes students each spring at the Annual Industrial Engineering Student Awards Banquet. The faculty, students, staff and alumni met together at the Fayetteville Town Center on the evening of April 18 for this annual event.

The department handed out its most prestigious awards, and the Arkansas Academy of Industrial Engineering

awarded scholarships. This year, the value of scholarships provided by members of the academy was $136,750. The department able to award an additional $41,500 in other scholarships and $16,000 in Imhoff Global Studies Scholarships, bringing total scholarship dollars to $194,250 for 71 deserving students!

Departmental Awards

The Outstanding Senior Award is intended to recognize the most outstanding undergraduate industrial engineering student who graduated in fall 2022 or is graduating in either spring or summer 2023.

Abby Harris was recognized this year as the 2023 Industrial Engineering Outstanding Senior. Harris has represented the core values of this award to the highest standard throughout her time on campus. This is evidenced by her selection as our ArcBest Outstanding First Year Industrial Engineering Student in 2019, a great start to her academic career. In her sophomore and junior years, she worked as a peer mentor in the First-Year Engineering Program and in her junior and senior years, as an undergraduate teaching assistant in the department. She has served as the Institute of Industrial and Systems Engineers student chapter president-elect her junior year and president her senior year. Outside of the College of Engineering, she has also taken on leadership roles in her sorority and college ministry team. She has held multiple industry internships, including in pricing and supply chain engineering at ArcBest Corporation and in engineering and technology at JB Hunt. Harris was also selected as a Senior of Significance by the Arkansas Alumni Association and a top senior by the College of Engineering.

Industry-Sponsored Awards

Each year, the ArcBest Corporation sponsors the Outstanding Freshman Award. This award is presented to one first-year engineering student who has declared industrial engineering as a major and is selected by the faculty and staff of the First-Year Engineering Program.

Trenton Cason and Blake Meier from ArcBest along with Teaching Associate Professor Tish Pohl presented the award to Ronni Formby.

Corporate sponsor Hytrol Conveyors presents the annual Hytrol Challenge Award, given each year to the best team in a competition in the transportation logistics or facility logistics course.

This year, the competition is from a group project in facility logistics in spring 2022. The team of Anna Lee, Conner Oxford and Halle Schneidewind earned the highest score on a comprehensive end-of-semester project focused on designing an automated storage and retrieval system.

Student-Sponsored Awards

The Outstanding Faculty Advisor Award is intended to recognize a faculty member for their contributions to students. The award is sponsored by the INFORMS student group. Students nominate the faculty, and the nominations are evaluated by external faculty members. The Outstanding Faculty Advisor was Ashlea Milburn. The award was presented by doctoral student, Maryam Kheirandish and faculty advisor for INFORMS, Shengfan Zhang.

The student group Alpha Pi Mu sponsors the Sophomore Scholar Award and the Imhoff Distinguished Service Award. The Sophomore Scholar Award goes to a new industrial engineering sophomore to recognize outstanding academic achievement. The recipient is chosen with input from faculty who teach sophomore-level courses. This year's recipient was Jacob Holmes.

The Imhoff Distinguished Service Award goes to an Alpha Pi Mu member to recognize their service and contributions to the Arkansas Alpha Pi Mu Chapter. Nominations are solicited from Alpha Pi Mu members, and Alpha Pi Mu members vote on the recipient. The recipient was Kathlyn Bowden.

The student chapter of the Institute of Industrial and Systems Engineers sponsors the Outstanding Undergraduate Teaching Assistant, Outstanding Graduate Teaching Assistant, the Backbreaker Award, the Best Teacher Award and the Resident Raconteur Award.

The recipients were:

- Outstanding Undergraduate TA: Blake Sooter
- Outstanding Graduate TA: Fatih Cengil
- Backbreaker Award: Kelly Sullivan
- Best Teacher: Richard Cassady
- Resident Raconteur Award: Tish Pohl

Seniors Recognized with Awards for Two-Semester Capstone Projects

Industrial engineering seniors were honored in spring for two semesters of work solving real-world problems alongside industry partners.

During the 2022-23 academic year, 54 industrial engineering seniors participated in the Industrial Engineering Capstone Experience as part of 11 teams of four to five students. The teams begin by getting to know their industry partner and the issues motivating the project. Students performed preliminary analysis and defined objectives for their spring semester work. They assessed the potential impact of their work and created the deliverables that their industry partner needed to implement their work. Every student pursuing the Bachelor of Science in industrial engineering at the U of A is required to complete the two-semester

PROJECT OF THE YEAR

A Decision Support Tool to Automate and Optimize Contract Staffing Using Linear Programming

Supported by: Infinity Labs LLC
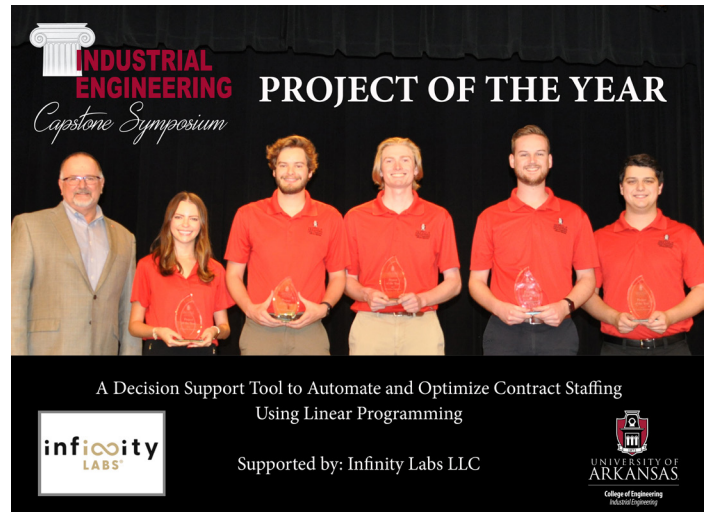
course sequence. Richard Cassady, University Professor of industrial engineering, coordinates the Industrial Engineering Capstone Experience courses.

OUTSTANDING ACHIEVEMENT IN DATA ANALYSIS

Improving Starting Price Point for Customer Re-Negotiations Using XGBoost

Supported by: ArcBest

OUTSTANDING ACHIEVEMENT IN MODELING

Using Simulation Analysis to Reduce Customer Sojourn Time in Tire and Battery Centers

Supported by:
Sam's Club Tire & Battery Centers

OUTSTANDING ACHIEVEMENT IN DECISION SUPPORT

Minimizing Changeover Time in Pet Food Production Using Integer Programming

Supported by:
Simmons Pet Food

IMPACT AWARD

Increasing Production Capacity and Efficiency Through Technology Upgrades and Labor Allocation

Supported by:
National Safety Apparel - Arkansas

The experience concludes with the Industrial Engineering Capstone Symposium, which was held in the Arkansas Union Verizon Ballroom on May 3.

The awards presented included:

Team Awards

- Project of the Year: Paris Joslin, team leader; Nathan Skinner; Will Cunningham; Conner Oxford; and Zach Leondike.
Project Title: A Decision Support Tool to Automate and Optimize Contract Staffing Using Linear Programming
Supported by: Infinity Labs LLC

- Outstanding Achievement in Data Analysis: Abby Harris, team leader; Zachary Oldham; Wesley Tate; Ernesto Serna; and Jacob Boshears.
Project Title: Improving Starting Price Point for Customer Re-Negotiations Using XGBoost.
Supported by: ArcBest

- Outstanding Achievement in Modeling: Jessica Creech, team leader; Joshua Manson-Endeboh; Kaylee Harrison; Ronan McDonnell; and Jacqueline Saldivar.
Project Title: Using Simulation Analysis to Reduce Customer Sojourn Time in Tire and Battery Centers. Supported by: Sam's Club Tire & Battery Centers

- Outstanding Achievement in Decision Support: Ross Harper, team leader; Halle Schneidewind; Griffin Langford; Danny Puente; and Willow Franks.
Project Title: Minimizing Changeover Time in Pet Food Production Using Integer Programming.
Supported by: Simmons Pet Food

- Impact Award: Ashley Stanek, team leader; Ben Mitchell; Cody Bonds; Hudson McDiarmid; and Rhett Caldwell.
Project Title: Increasing Production Capacity and Efficiency Through Technology Upgrades and Labor Allocation.
Supported by: National Safety Apparel - Arkansas

Individual Awards

- Outstanding Team Leaders: Bill Byers, Abby Harris, Paris Joslin.

- Outstanding Team Members: Halle Schneidewind, Nathan Skinner, Wesley Tate.

- Outstanding Faculty Advisers: Professors Chase Rainwater, Manuel Rossetti and Karl Schubert.

- Outstanding Industry Partners: Infinity Labs, National Safety Apparel, Simmons Pet Food.

Additional projects the Capstone Experience Teams completed were:

- Project Title: Reducing Stock-Outs in a Hospital Medication Dispensing System Using Simulation Analysis
Team: Carson Doss, team leader; Armon Afrasiabi; Gabe Ellis; Will Plunkett; and Dylan Deramus.
Supported by: Baptist Memorial Health Care Corporation

- Project Title: Developing a Priority Assignment Policy for the Empty Planner Application
Team: Bill Byers, team leader; Jackson Barclay; Carter Christian; and Joshua Walters.
Supported by: J.B. Hunt Transport Services, Inc.

- Project Title: Linear Optimization for Driver-Route Assignment With Fatigue and Balanced Workload Considerations
Team: Andrew Freeman, team leader; Katy Emerson; Nicolas Alcoreza; Sarah Wilson; and Emmanuel Jean Paul De La Gala Gomez.
Supported by: LATROBE LLC

- Project Title: Analyzing and Predicting Marketing Campaign Performance Using Regression and Time Series Analysis
Team: Agustin German Reichhardt, team leader; Luke Tyler; Sam Nelson; Sebastian Alborta; and Skyler Mantooth.
Supported by: Nestlé

- Project Title: Reducing the Cost of Inventory Counting With Improved Raw Material Storage
Team: Whitney Hines, team leader; Christopher Haywood; Jade Easter; Preston Boscamp; and Rodolfo Bissot Stargardter.
Supported by: Steco Corporation

- Project Title: Developing a Monitoring Tool and Management Policy for University Research, Office and Conference Room Space
Team: Tate Hasenclever, team leader; Valerie Jackson; Foster Thompson; Kristoffer Olsen; and Bowen Zhao.
Supported by: U of A, College of Engineering

SENIORS OF SIGNIFICANCE

The Arkansas Alumni Association announced the 2023 Senior Awards on May 19. Selected based on their academic achievements, leadership skills and extracurricular campus and/or community activities, the Seniors of Significance are the only students on campus who are eligible for the next two tiers of the Alumni Association's Senior Awards program: The Razorback Classics and Senior Honor Citation.

Abby Harris, 2023 Senior of Significance

Abby is from Fort Smith, Arkansas. She knew that she wanted to major in industrial engineering before starting at the University of Arkansas. In 2022-2023 academic year, she served as the Institute of Industrial and Systems Engineers (IISE) student chapter president and served as the president-elect during the 2021-2022 academic year. She has also been a member of Alpha Pi Mu and the Society of Women Engineers.

Abby worked as a Peer Mentor for First-Year Engineering during her sophomore and junior years, and as an undergraduate teaching assistant for Dr. Rainwater's Computing Methods II class in her junior and senior years.

Apart from the College of Engineering, Abby was active in the Wesley college ministry and Delta Delta Delta sorority where she served as the assistant to the House Mother and the Recruitment Logistics Coordinator.

During her undergraduate career, Abby was recognized

with numerous scholarships and awards. She was recognized as the ArcBest Corporation Outstanding Freshman in Industrial Engineering in 2020. She was awarded the Jean Rountree Fite Memorial Scholarship and the John and Lois Imhoff Endowment Scholarship for the 2021-2022 academic year. In the 2022-2023 academic year, Abby received the nationally competitive UPS Scholarship for Female Students from IISE.

Abby served as team leader for her capstone team which was sponsored by ArcBest. During the 2023 Capstone Symposium, she was recognized as an Outstanding Team Leader and her capstone team received an award for their Outstanding Achievement in Data Analysis. She graduated in May of 2023 with the highest distinction and was recognized as a First-Ranked Senior Scholar by the College of Engineering for maintaining a cumulative 4.0 grade point average. Additionally, she was recognized as the 2023 Outstanding Senior in the Department of Industrial Engineering.

During the summer of 2021 Abby interned at ArcBest as a Pricing and Supply Chain Engineering Intern and during summer of 2022 she interned at J.B. Hunt on the Dedicated Contract Services (DCS) team. Following graduation, Abby returned to ArcBest as a Pricing and Supply Chain Engineer.

Paris Joslin, 2023 Senior of Significance

Paris is from Little Rock, Arkansas and always knew that she wanted to attend the University of Arkansas. Her love for the university translated into a passion for on-campus involvement. She served as the secretary and vice president of the Institute of Industrial and Systems Engineers student chapter for the 2021-2022 and 2022-2023 school years, respectively. She was also a member of Alpha Pi Mu, and the Society of Women Engineers.

Apart from engineering, she was a member of the Delta Delta Delta Sorority, serving as banner chair assistant and recruitment logistics coordinator.

In terms of research and other relevant projects, Paris graduated with honors and completed undergraduate research with her advisor, Dr. Chase Rainwater. Her honors thesis was titled "Automated Visualization Pipeline of Near Real-time Risk Management System". She was also a Capstone Team Leader for the project titled "A Decision Support Tool to Automate and Optimize Contract Staffing using Linear Programming" in partnership with Infinity Labs LLC. Her team won several awards at the annual Capstone Symposium, such as Project of the Year, Outstanding Team Leader, Outstanding Team Member, Outstanding Faculty Advisor and Outstanding Industry Partner. She and her team participated in the Senior Design Competition at the national IISE conference in New Orleans, Louisiana where Paris was featured on the *Problem Solved* podcast.

Throughout her undergraduate career, Paris received several scholarships and awards. She was awarded the Harold & Inge Marcus National IISE Scholarship, was a member of the University of Arkansas Alumni Association Scholar program and was recognized as a First-Ranked Senior Scholar by the College of Engineering for maintaining a 4.0 GPA. Paris also completed her Six Sigma Green Belt Certification through IISE.

Paris completed four internships in a variety of industries such as political fundraising, civil engineering, aerospace technology & process improvement and supply network optimization. Her most recent internship was a product supply internship with Procter & Gamble on the Sam's Club Customer Team where she leveraged her knowledge of industrial engineering topics to build software tools to promote more meaningful data insights and help automate business practices.

She returned to Procter & Gamble and the Sam's Club Customer Team in Fayetteville, Arkansas after graduation as a Supply Chain Manager.

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, Kelly Sullivan coordinates the program. In 2022-23, eight undergraduate students completed the Honors College experience in our department:

Student	Thesis Title	Adviser
Jessica Creech	The Impact of a Carbon Tax on Emissions	Justin Chimka
Ross Harper	Testing the Effects of Different Designs on the Physical Properties of 3D-Printed Watch Bands	Haitao Liao
Tate Hasenclever	Smart Base Installations: Improving the Agile Development of Multidisciplinary Systems of Systems Projects Using Systems Engineering Techniques	Eric Specking
Valerie Jackson	Detecting Pathobiomes Using Machine Learning	Chase Rainwater
Paris Joslin	Automated Visualization Pipeline for Near Real-time Risk Management System	Chase Rainwater
Halle Schneidewind	Interaction Effects and Selecting Regression Models of Taylor Swift Song Popularity	Justin Chimka
Wesley Tate	Lead Distribution Modeling for Supply Chains with a Large Number of Items	Manuel Rossetti
Anna Lee	Simulating Emergency Evacuation Response in an Auditorium Space	Manuel Rossetti

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 are our professional graduate programs in Master of Science in Operations Management, Master of Science in Engineering Management and our newest program Master of Science in Operations Analytics.

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 (M.S.I.E.)

We have a strong and diverse master's program that provides opportunities for study in specific areas in industrial and systems engineering, as well as general master's study. Thesis, non-thesis and project tracks are available for all students. Master's graduates can select a plan that leads to advanced study at the Ph.D. level, or one that prepares them to challenging positions in the public or private sectors.

Doctor of Philosophy in Engineering (Ph.D.)

The Department of Industrial Engineering at the University of Arkansas has a reputation as one of the top doctoral programs. This reputation stems from the cutting-edge research conducted here and by the collaboration of a strong and experienced faculty with the top graduate students in the field. Doctoral students in industrial engineering experience rigorous academic study, requiring independent investigation that results in original scholarly work of the highest quality. Graduates are well prepared for positions in both academia and the private or public sector.

In addition to traditional degree options, the Department also offers online, the Master of Science in Operations Management (M.S.O.M.), the Master of Science in Engineering Management (M.S.E.M.) and the new Master of Science in Operations Analytics (M.S.O.A.).

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
- Big Data and Data Analytics

These areas continue to be supported by the following research centers and laboratories:

- Center for Excellence in Logistics and Distribution (CELDi)
- Mack Blackwell Rural Transportation Center (MBTC)
- Maritime Transportation Research and Education Center (MarTREC)
- ReliaSoft Risk, Reliability and Maintainability Research Alliance
- Arkansas Security Research and Education Institute (ASCENT)
- System Design and Analytics Laboratory
- J.B. Hunt Innovation Center of Excellence

Ashlea Milburn serves as graduate coordinator and oversees the Master of Science in Industrial Engineering and the Ph.D. programs.

Greg Parnell serves as director for the Master of Science in Operations Management and the Master of Science in Engineering Management programs and Chase Rainwater, department head and professor serves as director of the Master of Science in Operations Analytics.

More information can be found about our graduate programs here:

Graduate Students in Spotlight at IISE Conference in May 2023

At the annual Institute of Industrial and Systems Engineering conference in May, a team of master's students which included Jannatul Shefa, Md Sazid Rahman and Dewan Maisha Zaman, advised by Sandra Ekşioğlu, received the Logistics and Supply Chain Division Student Case Award for their study titled "A Case Study for Large-Scale Vehicle Routing." This was an international competition open to any student team.

Sandra Ekşioğlu, Md Sazid Rahman, Jannatul Shefa, and Dewan Maisha Zaman

Shefa also took second place in the Logistics and Supply Chain Division Best Student Paper Competition for her paper "Qualitative Analysis of Stakeholder Interviews to Explain Operational Characteristics of Staging Areas for Hurricane Disaster Response." Her adviser is Ashlea Milburn.

Doctoral candidate Guanzhou Wei was the recipient of the Best Paper Award in the Data Analytics and Information Systems track for his paper titled "Irregularly Sampled Time Series Classification Using Neural Stochastic Differential Equation." Wei is advised by Xiao Liu.

Also, in the Data Analytics and Information Systems track, the team of Maryam Kheirandish Borujeni, Jose Carlos Hernandez Azucena and Seyyed Farid Hashemian were selected as finalists in the Student Data Analytics Competition for their work on causal inference for predicting treatment outcome in breast cancer. Shengfan Zhang was their adviser.

And finally, two graduate students received scholarships from IISE this year, Maryam Kheirandish Borijeni and Adetola Odebode received the John L. Imhoff Scholarship. Ashlea Milburn coordinates the IISE scholarship nomination process.

Doctoral Student to Attend Prestigious Summer School Program

Doctoral student, Jose Carlos Hernandez Azucena was accepted to the Gene Golub SIAM Summer School on Quantum Computing and Optimization. This prestigious program was held July 30 to Aug. 12 at Lehigh University, the goal: to nurture the next generation of quantum computing researchers.

The program brings together experts and students in the fields of quantum computing and optimization to foster an inquiry-based learning environment. By creating a platform for collaboration and knowledge sharing, the program strives to equip participants with the necessary skills and expertise to contribute to the rapidly evolving field of quantum computing.

During the two-week program, participants delve into a comprehensive curriculum designed to bridge the gap between quantum computing, optimization and mathematics. The program begins with a concentrated review of essential mathematical concepts, optimization techniques and fundamentals of classical and quantum computing. This foundational knowledge will serve as a strong base for exploring more advanced topics in the field.

Azucena's acceptance is a testament to his academic excellence and passion for exploring the frontiers of technology. By participating in this program, he gained invaluable insights, established connections with leading researchers and acquired the skills necessary to make significant contributions to the field of quantum computing.

His Ph.D. research is focused on resilience modeling and optimization of critical infrastructure. He is advised by Haitao Liao, professor and John and Mary Lib White Endowed Systems Integration Chair. Liao said, "As a talented Ph.D. student who is interested in machine learning, statistics and optimization methods, Jose benefited greatly from this opportunity to learn more about quantum computing and identify the best practices in our field."

Department Graduate Awards

The Outstanding Graduate Student award is intended to recognize the top industrial engineering graduate student. The winners are selected by faculty vote based on excellence in academic performance, leadership, service, collegiality, ethics and dedication. The Graduate Research Award is also selected by faculty vote and recognizes the graduate student who made the most valuable contribution to departmental research efforts in 2022. The honor of Outstanding Graduate Student for 2022 went to Jose Carlos Hernandez Azucena.

With his adviser, Haitao Liao, Azucena has been conducting research in physics-informed statistical learning methods and constrained bilevel optimization methods for decision-making. Potential applications of this work include additive manufacturing and optimal

sensor network deployment. In 2022, he completed three refereed journal articles on these topics, two of which have been accepted. He was selected as the finalist of the 2022 INFORMS Quality, Statistics and Reliability Best Refereed Paper Competition. He completed an internship with the IBM Watson Research Center in summer 2022 and completed a Walmart Senior Data Scientist Internship in summer 2023.

The 2022 Graduate Research Award was presented to Xinchao Liu. Liu, with his adviser, Xiao Liu, has conducted research in the varied areas of reliability, statistics, machine learning and deep learning. During his time as a doctoral student, he has been the first author of two refereed journal articles, three refereed conference proceedings articles and has participated in research presented at eight different conferences. His accolades include a Doctoral Academy Fellowship and the Society of Reliability Engineers Stan Ofsthun Best Student Paper Award at the Reliability and Maintainability Symposium, also known as RAMS. At RAMS, he also received the Hans Reiche Scholarship. He was part of a finalist team in the Quality, Statistics and Reliability INFORMS Data Challenge Competition in 2019. He has provided important service to the Department of Industrial Engineering serving as the treasurer of the INFORMS student chapter.

Wild Band of Razorbacks

Standing at an impressive 25 feet tall and 50 feet wide, the "Wild Band of Razorbacks" monument is the work of wildlife sculptor, Dick Idol. Located on the northeast side of Donald W. Reynolds Razorback Stadium, the masterpiece features six bronze wild hogs set against a mountainous backdrop. The lead hog is strategically placed to mimic the iconic Razorbacks' logo.

College of Engineering
Master of Science in Operations Analytics

The Master of Science in Operations Analytics...

... is an intensive program that will guide students through the theory and practice of the quantitative modeling of enterprise operations via descriptive, predictive and prescriptive analytics.

Students will develop knowledge of the principles and practices of analytics modeling methods, such as:

- Optimization
- Simulation
- Machine Learning
- Statistical Modeling
- Computing Methods

applying them to the strategic, operational, and tactical control of operations.

Why the U of A in Fayetteville?

Program Features
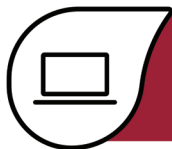
| 8-Week Courses | 100% Online | 30 Credits | 2 Years |

Robert Meier
MS, Operations Analytics | 2022

" This rigorous and innovative program equipped me with a comprehensive understanding of analytical techniques and their applications in optimizing business operations. "

INDUSTRIAL-ENGINEERING.UARK.EDU
operations-analytics.uark.edu

M.S.O.M./M.S.E.M. OVERVIEW

The Master of Science in Operations Management (M.S.O.M.) graduate degree program began in 1974 and is designed for professionals from a broad range of backgrounds, including business and government operations. Students learn how to create value to the production of goods and services while working with worldwide suppliers and customers. The Master of Science in Engineering Management (M.S.E.M.) graduate degree program began in 2017 and prepares engineers to lead and manage teams, projects and organizations with technical workforces to meet strategic objectives.

The M.S.O.M. 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 bodies.

In the 2022-23 academic year, there were 553 unique students enrolled in the program and a total of 2,093 course enrollments for the year. Over ninety percent of those enrollments were online courses. The Master of Science in Operations Management program continues to be the University's largest graduate program with 138 students completing their degree in the 2022-23 academic year bringing that to a total of 6,122 graduates of the MSOM program.

The coursework emphasizes practical knowledge in areas such as project management, decision making, supply chain management, quality management and 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 principles

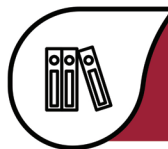of management and equips graduates to carry out their managerial responsibilities more effectively. Students can select from thirty-seven graduate courses to make up the ten required to complete the degree.

The program is offered at the University of Arkansas' flagship Fayetteville campus and via online learning. It is also hosted on two active-duty bases, Naval Support Activity Mid-South at Millington, Tennessee; and Hurlburt Field Air Force Base at Fort Walton Beach, Florida.

By operating in eight-week terms and having an online option for program courses, the flexibility of the program accommodates students employed full-time by Fortune 500 companies such as Walmart, Sam's Club, Tyson Foods, J.B. Hunt Transport, FedEx, Lockheed-Martin and Pratt & Whitney. We are proud of our military affiliation and have many current military members and veterans as students from all branches of service stationed at our host bases and throughout the world.

The curriculum is presented by outstanding faculty members who are drawn from the University's Industrial Engineering Department and from business and government throughout the country. There are three industrial engineering faculty members, with one full-time Master of Science in Operations Management instructor and almost fifty part-time instructors who teach in the program.

Admission to the program requires a student to have a minimum grade-point average of 3.0 either on the last sixty credit hours of attempted baccalaureate coursework, or from all coursework from the first conferred baccalaureate degree from a regionally

accredited institution. The program now encourages students who have a GPA between 2.5 and 3.0 to enter one of the accompanying graduate certificates, in order to gain admission if they complete coursework with a 3.5 GPA. This is a popular option that is helping more students matriculate into the program.

Graduate Certificates

The motto, "Learn it Today, Use it Tomorrow" guides the program. With this goal in mind, the program has five, four-course graduate certificates that are popular among Master of Science in Operations Management students. The certificates can be taken concurrently with the Master of Science in Operations Management or Master of Science in Engineering Management programs or be earned as a stand-alone certificate.

Graduate certificates were offered beginning in 2017 in Project Management, followed by Homeland Security in Spring 2020 and Lean Six Sigma in Summer 2020. In Summer 2022, the Engineering Management, Engineering Management Analytics and Operations Management graduate certificates were added to the programs. In the 2022-2023 academic year, 156 students graduated with the Project Management Graduate Certificate, and 44 for Lean Six Sigma, 19 students for Homeland Security, 14 for Engineering Management, 13 for Operations Management and one for Engineering Management Analytics.

Microcertificates became available in Summer 2022. Each microcertificate consists of two courses for a total of six credit hours and are a pathway for students to build their credentials along the way to earning other microcertificates, graduate certificates or even their master's degree. The new microcertificates are in: Advanced Air Mobility, Analytics for Operations Managers, Decision Support for Operations Managers, Leading Operational Change, Systems Engineering Analytics and Systems Engineering & Engineering Management. Students are able to complete their first credential in as little as eight weeks.

With the M.S. in Operations Management and the M.S. in Engineering Management, you can start with a two-course microcertificate, continue with additional microcertificates or four-course graduate certificates, then apply all courses to a ten-course graduate degree. Many of these programs could help prepare students to sit for a national exam for credentials and one leads to obtaining an FAA Remote Pilot certification.

Students are excited to pursue microcertificates while working their way through other programs. So far the programs have seen an impressive graduation rate

for the following programs: 122 Leading Operational Change, five Analytics for Operations Managers, four for Decision Support for Operations Managers, two for Systems Engineering and Engineering Management, and one each for Systems Engineering Analytics and Advanced Air Mobility Autonomous Operations.

Master of Science in Engineering Management

The Master of Science in Engineering Management (M.S.E.M.) began in Fall 2017 and had its highest enrollment over the academic year 2022-23 with 126 active students. The percentage of new students increased by 11% this academic year ending with 38 graduates. The curriculum prepares engineers to lead and manage teams, projects, and organizations with technical workforces to meet strategic objectives. Students will increase their engineering management knowledge to enable them to develop and deliver new products and services to create value for their organization and customers. This program is designed for engineers with ABET-accredited bachelor's degrees in engineering who want to move into leadership positions in their organizations. As of summer 2023, there were a total of 103 M.S.E.M. graduates.

In addition, 35% of M.S.E.M. students were also enrolled in a certificate program, 20% of those pursued the Project Management Graduate Certificate and 3% pursued the Lean Six Sigma Graduate Certificate. 2 M.S.E.M. students were enrolled in the M.S.O.M. certificate.

Introducing Our Newest Staff

In fall 2022 we added two new members to our Master of Science in Operations Management/Engineering Management team: Gulshad Koshkarbaeva came to us from the Graduate School and International Education. She holds a bachelor's degree in public health and a master's in operations management. She is serving as advisor and academic services coordinator.

Also joining us in fall 2022, Amanda Ogden. Amanda

The annual Faculty M.S.O.M. / M.S.E.M. Meeting at the Don Tyson Center for Agricultural Sciences.

came to us from the public-school realm with fifteen years of experience in high school science and math. She completed her bachelor's degree in biology and MAT in science education at Hastings College; and masters in mathematics education from Western Governors University. She is stepping into the role as Assistant Director of the Master of Science in Operations Management and Engineering Management Programs.

Annual Faculty Meeting

The annual Faculty Meeting was held July 27-28, 2023, with over fifty in attendance. Attendees included the Master of Science in Operations Management and Master of Science in Engineering Management faculty, staff, and guest speakers. Those gathering in-person met at the Don Tyson Center for Agricultural Sciences, with ten attending virtually, to collaborate on course development and participate in training and learning more about the College of Engineering Vision.

During the meeting, instructors learned best practices from one another, engaged in a panel discussion with students, and were able to gain information and updates regarding department plans and online services. ProctorU gave a demonstration of their new platform for testing, Blackboard showed test questions options, and great discussions were had about ChatGPT and AI in our programs.

In addition to the learning and networking opportunities, there were awards presented to the faculty and community partners.

Rashóne Tate received the Rookie of the Year award. This award recognizes an outstanding instructor who has

gone above and beyond to contribute to student success and program efforts, making a difference in a relatively short period of time. Ms. Tate jumped right in by redeveloping a course and has been quick to volunteer ideas. Students state that she always has a positive attitude and made working with her fun.

The Leonard Nethercutt Innovator of the Year award went to Jeff Bean. The Innovator award is open to any instructor in M.S.O.M. or M.S.E.M., who increases learning outside the traditional curriculum through innovative teaching and service. Jeff is solutions oriented, has a positive attitude and is always problem solving to improve how he presents his material in future terms.

Phil Jones was the recipient of the Randy Roy Instructor of the Year award. This award recognizes an instructor who goes above and beyond to help students in the M.S.O.M. and M.S.E.M. programs and has volunteered to help when program needs arise. When a student does not understand a concept, Phil is quick to jump on a call with the student to work through examples until they understand. He has helped to rebuild courses, is always willing to take on a new course, and is an absolute go-getter.

The final award at the faculty meeting was the Campus Partner Award. This year's campus partner has played a key role in the success of the M.S.O.M. & M.S.E.M. programs. Jay Weaver was a natural choice because he is always willing to help by working weekends and going above and beyond to admit our students. He works in the Graduate School Admissions Department, and he is easy to work with, and has been a valuable asset in our graduate admissions adventure.

Scholarship Recipients

Also, during the annual meeting, the recipients of scholarships were announced. Bryana Hunter was the recipient of the fall 2023 M.S.O.M. Scholarship. Bryana earned her bachelor's degree in biochemistry at the University of Arkansas. Her goal is to complete her masters in operations management and then start medical school. She has set her sights on pursuing a career either as a physician or in the field of medical device development.

Throughout her academic journey, Bryana has demonstrated exceptional leadership qualities. As an active member of the Student Athlete Advisory Committee (SAAC) and the Black Leadership Advisory Committee, she has taken on roles that promote community engagement, personal development, and career growth for her fellow students. As the SAAC Marketing Chair, Bryana has utilized her creativity to design graphics and leverage social media to raise awareness about SAAC initiatives and student-athlete achievements.

On top of her academic and leadership responsibilities, Bryana has been a valuable player on the University of Arkansas Women's Soccer team. Her experience in athletics has taught her crucial skills such as time management, teamwork, and accountability.

Bryana shared that with the scholarship her financial burden has been lightened, allowing her to focus on her studies and preparation for medical school. Her goal is to inspire young girls to pursue careers in STEM fields and give back to the community.

The fall 2023 Amass Family M.S.O.M. Award went to Timothy Moore. Moore completed a bachelor's degree in environmental soil and water science from the University of Arkansas, in 2016.

He shared, "As my career progressed, I discovered my growing interest in the management aspects of the environmental industry, which led me to explore opportunities to further develop my skills in operations management. After thorough research and careful consideration, I chose the M.S.O.M. program for its

excellent reputation, comprehensive curriculum, and alignment with my career aspirations."

Upon completing his master's degree, Tim aspires to transition into a new industry or sector outside of the environmental field. He is eager to embrace new challenges and expand his professional horizons.

Student Earns Prestigious Boren Fellowship

Harry Keatts Chenault Jr. will represent the U of A internationally as a Boren Ambassador in India through the prestigious Boren Fellowship, which funds research and language study proposals by U.S. graduate students in world regions critical to U.S. interests.

Chenault, who is pursuing his master's degree in operations management, is a diversely accomplished scholar who was also a Fulbright scholar and spent that time studying Arabic at the Arabic Language Institute at American University at Cairo. He also studied at the Hebrew University of Jerusalem and earned his Ph.D. in the Department of Middle Eastern and Islamic Studies on U.S. presidential foreign policy in the Middle East.

His current research will be on Kennedy and Nehru and will refer back to Truman and Eisenhower in the Far East.

Professor Recipient of INFORMS Paper Award

William Caballero, adjunct professor in the Master of Science in Operations Management and Engineering Management programs, was recently recognized as a finalist for the Clemen-Kleinmuntz Decision Analysis Best Paper Award from the Institute for Operations Research and the Management Sciences (INFORMS). The award is given to researchers who publish papers in the *Decision Analysis Journal*, a publication of INFORMS.

Caballero joined the U of A in summer 2023. He received his doctoral degree in operations research from the Air Force Institute of Technology and is serving in the United States Air Force in addition to his duties for the U of A.

ALUMNI HIGHLIGHTS

College of Engineering Celebrates Alumni at Awards Banquet

College of Engineering alumni, faculty, staff and guests gathered Saturday, April 15, to induct two new members into the college's Hall of Fame and recognize 18 graduates with Distinguished Alumni and Early Career Alumni awards.

The formal event featured dinner and an awards ceremony led by Dean Kim Needy and co-hosts Pam McGinnis and Becca Leonard, with remarks by Terry Martin, provost and executive vice chancellor for academics, at the Fayetteville Public Library Event Center. McGinnis is chair of the college's Dean's Advisory Council and Leonard is chair of the Early Career Advisory Council.

"We wish the very best for all of our students when they leave the University of Arkansas, and it's so rewarding to celebrate the success of our outstanding alumni," Needy said.

The two new inductees to the Hall of Fame were: Sam Alley (B.S.C.E. 1979), chairman of VCC, a Little Rock-based contractor, and Pam McGinnis (B.S.I.E. 1990), retired vice president of global sales, marketing and retail operations at Phillips 66.

McGinnis is the second woman to be inducted into the college's Hall of Fame. A native of Springdale, she earned a Bachelor of Science in industrial engineering in 1990. She worked for more than 31 years in the oil and gas industry. Prior to assuming her role as vice president at Phillips 66, she was chief procurement officer and held a variety of leadership positions across the company,

"We wish the very best for all of our students when they leave the University of Arkansas, and it's so rewarding to celebrate the success of our outstanding alumni."

-- Kim Needy, Dean

including commercial supply and trading, marine shipping and truck and rail transportation.

Prior to her retirement, she served on the boards of the National Action Council for Minorities in Engineering and

Co-hosts Pam McGinnis and Dean Kim Needy

the Fuels Institute. She was a member of the executive Inclusion and Diversity Council and served as a global sponsor for the Phillips 66 Hispanic Network. McGinnis also served as chair of the board for the Houston Area Habitat for Humanity.

Nine graduates were honored with Distinguished Alumni awards those recognized from the Department of Industrial Engineering included: Jeff Fackler (M.S.O.M. 2013) and Karen Jewell (B.S.I.E. 2000).

Another nine graduates received Early Career Alumni Awards: Christopher Adkins (B.S.I.E. 2012) and Christopher P. Velardi (M.S.O.M. 2019) were the awardees from industrial engineering.

Arkansas Academy of Industrial Engineering Inducts Members, Announces Faculty, Staff Awards

The Arkansas Academy of Industrial Engineering, faculty, staff, family and friends gathered on the evening of April 14 to celebrate the induction of 14 new members.

This marked the 37th anniversary of the Academy. The event was held at the Holiday Inn Convention Center in Springdale, Arkansas.

The evening was punctuated by the outstanding success of the annual silent auction, which raises funds for scholarships. Donations from the auction totaled $1,400.

New members inducted:

- Jason Evans, B.S.I.E. 2003; Walmart, - vice president, supply chain acceleration

- Stephanie Gerard, B.S.I.E. 1998; Western Peaks Logistics - director of sales and business development

- Dorcedar House, B.S.I.E. 2004; Greenheck Group - general manager, precision coils

- Jason Imhoff, B.S.I.E. 2005; Sig Sauer - chief technology officer and vice president of business development, ammunition

- Lauren Lowe, B.S.I.E. 2007; Walmart - senior director, grocery distribution finance

- Ryan McDaniel, B.S.I.E. 2003; Walmart - vice president, transportation private fleet

- Chuck Murphy, B.S.I.E. 2005; Boeing - product manager for manufacturing execution systems

- Elizabeth E. Murphy, B.S.I.E. 2006; Procter & Gamble - customer supply chain director

- Anthony Le Nguyen, B.S.I.E. 2000; Safe Foods - manager, fabrication and plant engineering

- Jeffrey Rieske, B.S.I.E. 2006; ZS Associates - associate partner, head of strategy and transformation tech for pharma R&D

- Robert Seward, B.S.I.E. 2003; Marshalltown - senior director, engineering

- Luke Shelton, B.S.I.E. 2006; Jaco Sales - president/owner

- Jessica Smith, B.S.I.E. 1999; J.B. Hunt Transport - engineering and technology optimization manager

- Don Stanley, B.S.I.E. 1986; Accenture - technology delivery lead senior manager, Oracle supply chain innovation lead

The academy also gives faculty and staff awards for outstanding performance. This year, the Academy Faculty Member of the Year was Professor Haitao Liao. The award recognizes a faculty member who has contributed strongly to the department's mission for outstanding research, teaching and service.

Liao holds the John and Mary Lib White Chair in Systems Integration. He excels in all areas: teaching, research and service, and has a significant impact as a mentor and role model for junior faculty. He is an exceptional scholar. This past year he led the department with eight journal articles and two refereed conference papers published. One of his conference papers was selected as the best paper by an Institute of Industrial & Systems Engineers member at the Reliability and Maintainability conference. He has five journal articles accepted for

publication and nine others out under review. Liao leads the Arkansas team in a National Science Foundation EPSCOR Track II grant worth $1.4 million. This grant, entitled Artificial Intelligence on Sustainable Energy Infrastructure Network, is part of a larger multi-university effort.

With respect to teaching, Liao taught three graduate courses last year and led the department with his teaching scores. He currently advises four doctoral students and co-advises one other in addition to advising two honors undergraduate students.

Professionally, he serves as an associate editor for two leading reliability journals and is sought after to serve as a judge for best student papers and best student poster presentations by several of professional societies.

Matthew Sparks was the recipient of the Administrative Staff Member of the Year Award. Sparks has been a loyal member of the industrial engineering team for 15 years. He is the head of the technology team and was recently asked to serve the College of Engineering as the director of information technology. Each of these roles requires a great deal of leadership, and Sparks not only exemplifies the qualities of a great leader, but he is also taking steps to further his skills. He was recently nominated for and selected to attend a 10-month prestigious leadership program with colleagues from the U of A campus and five other universities. Just being selected is a testament to his talent.

The Support Staff Member of the Year Award went to Luan Ho. Ho has served the department as a computer support manager since August 2021 but has been a valuable U of A staff member since 2010. Ho has played an integral role in the department's redesign and installation of new audio/visual equipment to ensure the department is giving students and faculty the best possible technology.

The weekend was capped off with the Arkansas Academy of Industrial Engineering annual meeting, followed by the traditional catfish picnic.

The date for next year's Academy Weekend is April 20 and 21, 2024.

I.E. Alumnus Recipient of OR Award

Recognized as a finalist for the Clemen-Kleinmuntz Award from the Institute for Operations Research and the Management Sciences (INFORMS), was recent alumnus Colin Small. He and co-author Eric Bickel were recognized for their paper titled, "Model Complexity and Accuracy: A COVID-19 Case Study."

Small is a graduate of the Department of Industrial Engineering, receiving his bachelor's degree in spring 2016 and master's degree in spring 2019. He is currently a doctoral candidate at the University of Texas.

The award is given to researchers who publish papers in the Decision Analysis Journal, a publication of INFORMS.

LIAISON COMMITTEE

The Arkansas Academy of Industrial Engineering 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 industrial engineering students.

The A.A.I.E. organizes a Liaison Committee that serves as an 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 Department of Industrial Engineering.

It is the opinion of this year's Liaison Committee that the department's culture remains healthy and strong even through the pandemic. The family nature of the faculty is unique in this department. It continues to make an impact on the students and the overall success of the department. It is easily observed that the faculty and staff highly respect and genuinely care for each other and for the future of the department. Overall, the committee believes the department continues to shine and evolve to support student needs and industry needs.

Members of the 2023 Liaison Committee

- Karen Jewell, Chair of Committee is Senior Vice President of Engineering and Technology at J.B. Hunt Transport Services, Inc.

- Stu Garrett, Business Development Manager, Aviation & Federal at Burns & McDonnell and current president of the Arkansas Academy of Industrial Engineering.

- David Humphrey, Vice President of Investor Relations for ArcBest in Fort Smith, Arkansas.

- Dr. Ilyas Iyoob, Chief Data Scientist and Distinguished Engineer at IBM-Kyndryl.

- Dr. Bill Klimack, Decision Quality Manager, BP. Klimack is also a Retired U.S. Army Officer and Former Department Head at West Point, Decision Analysis Manager at Chevron (Retired 2020).

- Dr. Gül E. Kremer, Professor and Chair of the Department of Industrial and Manufacturing Systems Engineering at Iowa State University.

- Dr. Russ Meller, Principal Scientist and Director of the Science & Technology Center for Excellence at FORTNA.

- Douglas Mettenburg, VP Engineering & Technology with J.B. Hunt Transport, Inc.

- Willie Mongtomery, III, Senior Director of Data Science in Supply Chain Analytics with Walmart Inc.

- Dr. Jen Pazour, Associate Professor of Industrial and Systems Engineering at Rensselaer Polytechnic Institute (RPI).

- Tarek Taha, Sr. Director Engineering & Technology with J.B. Hunt.

- Martha Wolf, Principal Network Design Engineer at AT&T and President-Elect of the Arkansas Academy of Industrial Engineering.

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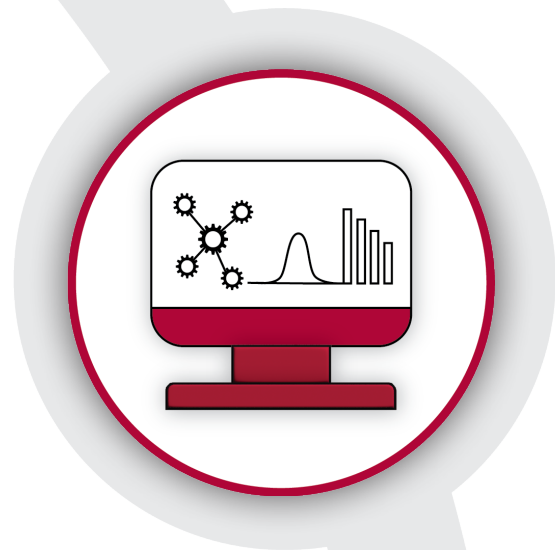
The Industrial Engineering Department has three physical computer laboratories for student use. These are the Foust Lab (BELL 4127-4128), Stephens Lab (BELL 4134A) and a general access computer lab shared with Civil Engineering (BELL 4133). All are equipped with the latest hardware, software and specialized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

David D. and Nancy J. Foust Computation Laboratory

The Foust Computation Laboratory is industrial engineering's premier computing and teaching lab, providing general computing access for all students and supports the computing needs associated with course work. Included in the lab is a project area with whiteboards to encourage student discussions. Occupying approximately 2,100 square feet, the computer lab area can accommodate 44 students.

The 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 industrial engineering classes.

The Bill and Margaret Harrison Family Video Conferencing Facility

The Bill and Margaret Harrison Family Video Conferencing Facility was made possible by a contribution from alumni William and Margaret Harrison of Little Rock.

The paramount feature of the facility is the state-of-the-art software and equipment. The facility is equipped with 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. 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.

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 workspace 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.

Multi-Purpose Teaching Lab

This lab supports two undergraduate courses, Work Methods. The space is used to 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, worksite analysis and design. The space also features a conference area where student teams can meet to discuss research.

Capstone Experience Lab

Used primarily for students in the Industrial Engineering Capstone Experience course, the space is equipped with a conference area, mobile media cart with a 60" television monitor, computer and conference phone. This enables students to meet with industry partners, review draft versions of course milestones and make presentations of project results.
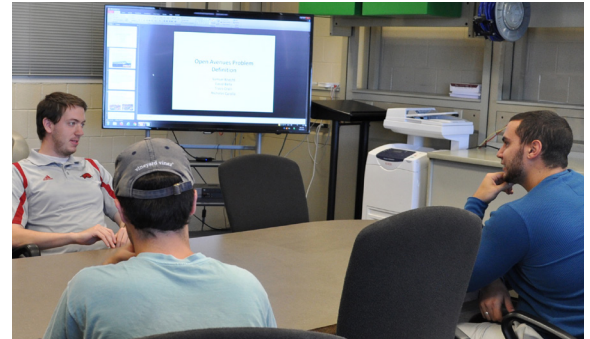
The AT&T Manufacturing Automation Laboratory

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 the vision-equipped Adept Cobra, a 4-axis SCARA geometry that is ideal for high-speed pick-and-place operations. The lab also features two collaborative robots: Baxter from Rethink Robotics and a UR10 from Universal Robots. Both are intrinsically safe and possess human-friendly task specifications, allowing humans to enter the work envelope and interact with the robots. With two seven-axis arms, integrated machine vision and an interactive display, Baxter can handle complex perception and manipulation tasks.

The UR10 is a traditional 6-axis articulated arm. Together they represent the next generation of industrial robotics.

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

OUR FACULTY

C. Richard Cassady, Ph.D.
University Professor
Ph.D. I.S.E (Virginia Tech)
M.S.I.S.E (Virginia Tech)
B.S.I.S.E (Virginia Tech)

Justin R. Chimka, Ph.D.
Associate Professor
Ph.D. (University of Pittsburgh)
M.S.I.E (University of Pittsburgh)
B.S.I.E. (University of Pittsburgh)

Brandon Crisel
Instructor and Undergrad Adviser
M.S.I.E. University of Arkansas
M.Sc. Math Arkansas State University
B.Sc. Math Arkansas State University

Rob Curry, Ph.D.
Assistant Professor
Ph.D. (Clemson University)
M.S.I.E. (University of Florida)
B.S.I.E. (University of Arkansas)

Burak Ekşioğlu, Ph.D.
Professor
Ph.D. (University of Florida)
M.S.E.B.M. (University of Warwick)
B.S.I.E. (Bogazici University)

Sandra Ekşioğlu, Ph.D.
Associate Dean for Research
Ph.D. (University of Florida)
M.S.E.M.S. (Mediterranean Agronomic
Institute of Chania)
B.S.B.A. (University of Tirana)

John R. English, Ph.D., PE
Professor
Ph.D. (Oklahoma State University)
M.S.O.R. (University of Arkansas)
B.S.E.E. (University of Arkansas)

Haitao Liao, Ph.D.
Professor
Ph.D. I.S.E. (Rutgers University)
M.S.I.S.E. (Rutgers University)
M.S. Statistics (Rutgers University)
B.S.E.E. (Beijing Institute of Technology)

Xiao Liu, Ph.D.
Assistant Professor
Ph.D. I.E. (National University of Singapore)
B.Eng. M.E. (Harbin Institute of Technology)

Kerry Melton, Ph.D.
Teaching Associate Professor
Ph.D. (Oklahoma State University)
M.S.I.E. (University of Arkansas)
B.S.I.E. (University of Arkansas)

Ashlea Bennett Milburn, Ph.D.
Associate Professor
Ph.D. I.S.E. (Georgia Tech)
M.S.I.S.E. (Virginia Tech)
B.S.I.E. (University of Arkansas)

Heather Nachtmann, Ph.D.
Professor
Ph.D. (University of Pittsburgh)
M.S.I.E. (University of Pittsburgh)
B.S.I.E. (University of Pittsburgh)

Kim LaScola Needy, Ph.D., PE, CFPIM, PEM
Dean, College of Engineering
Ph.D. (Wichita State University)
M.S.I.E. (University of Pittsburgh)
B.S.I.E. (University of Pittsburgh)

Gregory S. Parnell, Ph.D.
Professor of Practice and Director
M.S.O.M. and M.S.E.M. Programs
Ph.D. (Stanford University)
M.S. (University of Southern California)
M.E.I.S.E. (University of Florida)
B.S. (University of New York at Buffalo)

David Paulus, Ph.D.
Professor of Practice
Ph.D. (Colorado State University)
M.S.I.E. (University of Tennessee)
B.S.M.E. (University of Tennessee)

Edward A. Pohl, Ph.D.
Professor, Dean of Graduate School
Ph.D. (University of Arizona)
M.S.R.E. (University of Arizona)
M.S.S.E. (Air Force Institute of Technology)
M.S.E.M. (University of Dayton)
B.S.E.E. (Boston University)

Letitia M. Pohl Ph.D.
Teaching Associate Professor
Ph.D. (University of Arkansas)
M.S.S.E. (Air Force Institute of Technology)
B.S.M.E. (Tulane University)

Chase Rainwater, Ph.D.
Professor & Department Head
Ph.D. (University of Florida)
B.S.I.E. (University of Arkansas)

Manuel D. Rossetti, Ph.D., PE
University Professor
and Director of the Data Science Program
Ph.D. (The Ohio State University)
M.S.I.S. (The Ohio State University)
B.S.I.E. (University of Cincinnati)

Karl D. Schubert, Ph.D.
Professor of Practice
and Assoc. Director of the Data Science Program
Ph.D. (Uiversity of Arkansas)
M.S.C.E. (University of Kentucky, Lexington)
B.S.C.E. (University of Arkansas)

Haoming Shen, Ph.D.
Assistant Professor
Ph.D. (University of Michigan)
M.Math (University of Michigan)
M.E.C.E. (University of Michigan)
B.S.E.E. (Xi'an Jiaotong University)

Eric Specking, Ph.D.
Assistant Dean of Enrollment and Retention
Ph.D. (University of Arkansas)
M.S.I.E. (University of Arkansas)
B.S.C.E. (University of Arkansas)

Alice Squires, Ph.D.
Teaching Professor
Ph.D. (Stevens Institute of Technology)
M.B.A. (George Mason University)
B.S.E.E. (University of Maryland)

Kelly Sullivan, Ph.D.
Associate Professor
Ph.D. (University of Florida)
M.S.I.E. (University of Arkansas)
B.S.I.E. (University of Arkansas)

Alan Vazquez
Assistant Professor
Ph.D. (University of Antwerp)
M.Sc. (Monterrey Institute of Technology)
B.Sc. Math (Autonomous University of Nuevo León)

John A. White, Ph.D., PE
Distinguished Professor & Chancellor Emeritus
Ph.D. (The Ohio State University)
M.S.I.E. (Virginia Tech)
B.S.I.E. (University of Arkansas)

Shengfan Zhang, Ph.D.
Associate Professor
Ph.D. (North Carolina State University)
M.I.E. (North Carolina State University)
B.M. (Fudan University, Shanghai)

SIX WAYS TO PARTNER WITH THE DEPARTMENT OF INDUSTRIAL ENGINEERING

The Industrial Engineering Department at the University of Arkansas works with a wide network of collaborators. Listed below are some of the ways we are working together with the professional community for mutual benefits. We are always eager to explore new and creative ways to team up with you, our alumni and industry friends.

1

INDUSTRY RESEARCH OPPORTUNITIES
IE's faculty and students work with corporations, governmental agencies and other organizations to perform in-context research that provides new knowledge, tools and insights. Your research funding supports the project, provides valuable experience for students that prepares them to directly contribute to your organization and leverages the expertise and resources associated with a major research institution. Our focus is on ensuring that your research funding results in a measurable return on investment to your organization. For more information, contact Dr. Chase Rainwater: cer@uark.edu

2

PROJECT OPPORTUNITIES
The Capstone Experience Course, provides unique opportunities for companies to partner with students to solve real-world issues companies face. The student teams work closely with the company to identify projects of interest, then work together to identify objectives and ways to achieve desired outcomes. To partner with us, please contact Dr. Richard Cassady: cassady@uark.edu

3

MOCK INTERVIEWS
Through the Mock Interview program, sponsored by the Arkansas Academy of Industrial Engineering (AAIE), students are able to interview with actual employers to hone their interviewing skills. Interviewers come from companies that regularly recruit industrial engineers as well as AAIE members. The goal is to help prepare students so they are ready to present themselves in the best possible way at career fairs and job interviews. Contact: aaie@uark.edu

4

MENTORING CIRCLES
Through the Mentoring Program, IE students are provided with networking opportunities and access to industry professionals with whom they can discuss career opportunities, job expectations and skills and strategies for professional success. Industry mentors are provided the opportunity to share their passion for their profession and help develop the next generation of leaders, while building their own coaching, communication and leadership skills. Contact: aaie@uark.edu

5

COOPERATIVE EDUCATION AND INTERNSHIPS
Through cooperative education and internships, employers receive the benefit of working with some of the top students in our program. The students gain hands-on experience in the workforce and are able to use their newly acquired skills. Employers also find potential new employees by developing their relationship with the students. Contact: Dr. Jessica Park at jepark@uark.edu

6

GUEST SPEAKERS
The Industrial Engineering Faculty cannot be available for every single class during a semester. They, like all of us, have conferences to attend as well as family matters that take precedence over work at times. There are also times during a school year that bringing in a guest lecturer can add some variety in substance to a course as well as provide real world experiences that the faculty member may or may not be able to provide. For more information, contact Dr. Chase Rainwater: cer@uark.edu

1950
I.E. PROGRAM began at the University of Arkansas.

3 FACULTY FELLOWS
American Society for Engineering Management

10 FACULTY FELLOWS in professional societies

2 ENDOWED PROFESSORSHIPS
James M. Hefley and Marie G. Hefley Professorship in Logistics and Entrepreneurship

Twenty-First Century Professorship in Engineering

1 FACULTY FELLOW
Arkansas Research Alliance

2 FACULTY FELLOWS
American Society for Engineering Education

Society of Reliability Engineers

Institute for Operations Research and Management Sciences

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

3 ENDOWED CHAIRS
John and Mary Lib White Systems Integration Chair in Industrial Engineering

John L. Imhoff Chair in Industrial Engineering

Earl J. and Lillian P. Dyess Endowed Chair in Engineering

10 FACULTY FELLOWS
Institute of Industrial and Systems Engineers

1 FACULTY FELLOW
International Council on Systems Engineering

Society for Decision Professionals

Lean Systems Society

Military Operations Research Society

Contact Information

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

Faculty

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

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

Brandon Crisel .... bcrisel@uark.edu .... (479) 575-4815

Rob Curry .... rmcurry@uark.edu .... (479) 575-3156

Burak Eksioglu .... burak@uark.edu .... (479) 575-2328

Sandra Eksioglu .... sandra@uark.edu .... (479) 575-6042

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

Haitao Liao .... liao@uark.edu... (479) 575-6196

Xiao Liu .... xl027@uark.edu .... (479) 575-6033

Kerry D. Melton .... kdmelton@uark.edu .... (479) 575-3156

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

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

David Paulus... dpaulus@uark.edu .... (479) 575-3156

Edward A. Pohl.. epohl@uark.edu .... (479) 575-7762

Letitia (Tish) Pohl .... lpohl@uark.edu .... (479) 575-3667

Chase Rainwater... cer@uark.edu .... (479) 575-6029

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

Karl D. Schubert.. schubert@uark.edu... (479) 575-2264

Haoming Shen .... haomings@uark.edu... (479) 575-3156

Eric Specking .... especki@uark.edu... (479) 575-7032

Alice Squires... as287@uark.edu .... (703) 881-2228

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

Alan Vazquez.. alanv@uark.edu .... (479) 575-4785

John A. White .... jawhite@uark.edu... (479) 575-3156

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

industrial-engineering.uark.edu

WAYS TO GIVE BACK TO INDUSTRIAL ENGINEERING

Would you like to help the Department continue to provide world-class industrial engineering education and relevant, cutting-edge research? Below are some options to do just that!

Annual Giving: Annual gifts to IE are generally unrestricted to help meet the greatest current needs of the department.

Endowments: Endowments are created to provide support into perpetuity. Examples of endowments in IE are scholarships, fellowships, and faculty chairs.

Planned Giving: Planned gifts can be as simple as a bequest (included in your estate plans). Other options include trust vehicles and annuities, which have potential to provide an income stream and significant tax benefits.

Are you ready to help today?

Go to onlinegiving.uark.edu and enter account number: 30003454

Thank you!

For questions concerning giving, please contact:
Bill Lansden • 479-575-3075

UNIVERSITY OF
ARKANSAS

College of Engineering
Industrial Engineering

industrial-engineering.uark.edu