2023-24 ANNUAL REPORT

INDUSTRIAL Engineering

UNIVERSITY OF ARKANSAS

College of Engineering
Industrial Engineering

CONTENTS

Producing Leaders That Will Solve Tomorrow's Engineering Challenges

UNIVERSITY OF ARKANSAS

College of Engineering
Industrial Engineering

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DEPARTMENT HEAD WELCOME

Dear Colleagues, Alumni, Students, and Friends,

Serving as evidence to the innovation and dedication of our faculty, students, staff and alumni, I proudly present to you the Industrial Engineering department's annual report. In this report, you will learn about our significant accomplishments, developments and highlights from the past year.

Over the last year, we welcomed five new faculty members. I am delighted with their progress and how well they have integrated into our team. I am excited to watch as they continue to enhance our department. David Paulus is one of those new faculty members and over this year, he was selected to serve as Director of the Operations Management and Engineering Management graduate programs.

In this report, you will see that our faculty members have consistently excelled in their research efforts, providing valuable insights within their fields. Their innovative work not only enhances our academic community but also positively influences society as a whole. These efforts are being recognized nationally, which is a true testament to the dedication and hard work involved. Burak Ekşioğlu was inducted as a Fellow of the Institute of Industrial and Systems Engineers (IISE), the highest classification of membership in the organization. Burak is the 10th fellow on our current faculty, which is outstanding!

Additionally, two of our faculty members were recognized by their alma maters for their contributions to engineering. Dean Kim Needy was honored by the University of Pittsburgh Swanson School of Engineering as a Distinguished Alumni and Assistant Professor Rob Curry was honored by Clemson University with the prestigious Young Alumni of the Year award. We are honored to work with colleagues who continue to bring pride to the universities they attended.

We have big changes and exciting initiatives on the horizon. We are officially changing the name of our undergraduate degree to Bachelors of Science in Industrial Engineering and Operations Analytics. We are confident this change will more accurately describe our curriculum and further the career possibilities for our students.

There are many more achievements to highlight, and I hope you'll continue reading this report. Serving as head of the Department of Industrial Engineering is a privilege. I am grateful for the students, faculty, staff and alumni I have the pleasure of working with each day.

We sincerely appreciate your ongoing support and partnership. Together, we look forward to embracing the opportunities and challenges of the new academic year as we continue to build on our successes and shape 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

University of Arkansas Engineering Department Renames Undergraduate Degree to Reflect Evolving Analytics Curriculum

The University of Arkansas' Department of Industrial Engineering renamed its undergraduate degree to the Bachelor of Science in Industrial Engineering and Operations Analytics in fall 2024. This change reflects the department's commitment to evolving alongside the industry and enhancing the relevance of its curriculum.

Chase Rainwater, Department Head of Industrial Engineering, commented, "For more than 70 years, the department has taken pride in awarding a Bachelor of Science in Industrial Engineering to thousands of students. The decision to add Operations Analytics to the degree name reflects the evolving role and skills of modern industrial engineers."

"The decision to add Operations Analytics to the degree name reflects the evolving role and skills of modern industrial engineers."

Chase Rainwater
Department Head

Industrial engineers have always played a crucial role in optimizing systems involving people, equipment, and information. Their expertise spans various industries, including transportation, retail, healthcare and production. With advancements in computing power, these professionals are now increasingly utilizing analytics tools to enhance operational designs and improvements. This has led to a greater need for integrating analytics into the educational curriculum for industrial engineers.

The renaming of the degree is part of a broader revision of the undergraduate program. These changes address the growing demand for analytics expertise among industry stakeholders. The updated curriculum places a stronger emphasis on computing, modern data analysis techniques, early training in mathematical modeling and application-driven courses in operations analysis.

In today's data-driven world, these skills are essential for creating models that understand past performances, predict future behaviors and prescribe effective policies for industrial systems. The updated curriculum has received positive feedback from students, alumni, employers and academic peers, underscoring its relevance and necessity.

J.B. Hunt Capstone Team lead and senior student, Rachel Thomas, shares her thoughts on the new direction of the discipline: "Many aspects of our award-winning project for J.B. Hunt reflect the evolving skills needed for today's industrial engineers. Our team project used data analytics to suggest answers to real-world problems to create a decision-support tool for J.B. Hunt. The tool uses both clustering and integer programming to provide zoning solutions," she continued, "I am excited to see this name change taking place, I believe it captures the complete range of skills that students acquire through this incredible program."

Tarek Taha, Senior Director, Engineering & Technology at J.B. Hunt Transport, Inc. shares "We appreciate the hard work of the design team in delivering a project

with tangible benefits. We are already using this tool and seeing results!"

By incorporating these changes, the University of Arkansas aims to produce graduates who are not only proficient in traditional industrial engineering skills but also equipped with advanced analytical abilities. This initiative ensures that the program remains aligned with the evolving needs of industries that increasingly rely on data and analytics for their operational strategies.

Kim Needy, Dean of the College of Engineering, stated, "I am proud that the faculty of the Department of Industrial Engineering at the University of Arkansas has recognized emerging needs in our field. It is important that we evolve our programs to ensure that the next generation of industrial engineering students are prepared to be successful."

The Department of Industrial Engineering's decision to rename its undergraduate degree and revamp the curriculum underscores its dedication to preparing graduates for success in a rapidly changing landscape.

For more information about the new undergraduate curriculum and opportunities in the field of industrial engineering and operations analytics, please visit the department's webpage.

FACULTY 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

American Society for Engineering Management
Kim Needy
Heather Nachtmann
Edward A. Pohl

Institute of Engineering & Technology
Karl D. Schubert

Institute of Industrial & Systems Engineers
Richard Cassady
Burak Ekşioğlu
Sandra Ekşioğlu
John English
Haitao Liao
Heather Nachtmann
Kim Needy
Edward A. Pohl
Chase Rainwater
Manuel Rossetti

Institute for Operations Research and the Management Sciences
Greg Parnell

International Council on Systems Engineering
Greg Parnell

Lean Systems Society
Greg Parnell

Military Operations Research Society
Greg Parnell

Society for Decision Professionals
Greg Parnell

Society of Reliability Engineers
Richard Cassady
Edward A. Pohl

RESEARCH FEATURE

Reliability and Resilience Improvement of Critical Infrastructures

Haitao Liao is John and Mary Lib White Systems Integration Chair and Professor in the Department of Industrial Engineering at The University of Arkansas. He is the recipient of numerous awards, including a National Science Foundation CAREER Award in 2010 and the 2017 Alan O. Plait Award for Tutorial Excellence.

In addition, he is a five-time winner of William A. J. Golomski Best Paper Award and three-time winner of Stan Ofsthun Best Paper Award.

Liao is a Fellow of IISE, and a member of INFORMS and Society of Reliability Engineers.

Critical infrastructures, such as power networks, gas and oil pipelines, highways, and inland waterways, are often vulnerable to failures caused by aging, natural hazards, and human-induced disturbances. Examples of such high-impact failures include the Northeast blackout of 2003, and the most recently, the gas pipeline explosion in Laverne, Oklahoma and the Francis Scott Key Bridge collapse this year. To reduce potential losses, it is crucial to efficiently assess the reliability of critical infrastructures over time and their resilience against various hazards and perform necessary improvements as much as possible. Data from various sources have been used to learn insights in almost every aspect of operations and make informed decisions in engineering applications. As part of the effort of industrial engineers, we strive to make aging critical infrastructures meet or go beyond reliability requirements by making full use of data, mathematical models, and optimization techniques. Fortunately, the goal can be achieved more effectively when appropriate machine learning methods are utilized.

As one of the most important reliability measures of an infrastructure network, all-terminal network reliability is defined as the probability that all nodes in the network are connected. However, as the numbers of edges and nodes increase, calculating all-terminal network reliability becomes a computational challenge. The technical barrier is more significant when the goal is to improve the reliability of the network, as a sequence of network reliability evaluations is needed during optimization possibly in a large design space. To overcome this challenge, Liao's team proposed using Artificial Neural Networks, such as Graph Neural Networks (GNNs), to efficiently estimate all-terminal network reliability and developed a sequential optimization framework using Deep Reinforcement Learning to facilitate network reliability optimization. Moreover, given an existing network and available resources, the approach has been extended to determine the best sequence of topology changes, maintenance, and repairs to ensure the network's all-terminal reliability over a finite time horizon. Their numerical experiments show that the GNN model outperforms those alternatives in estimating all-terminal network reliability, and the Deep Reinforcement Learning framework can efficiently suggest a sequence of actions to maintain the network's reliability at a high level.

Preventive maintenance is often carried out as part of system resilience enhancement efforts. In practice, its economic benefit can be greatly enhanced if the reliability performance of the system in the field is well characterized. However, a critical infrastructure is usually exposed

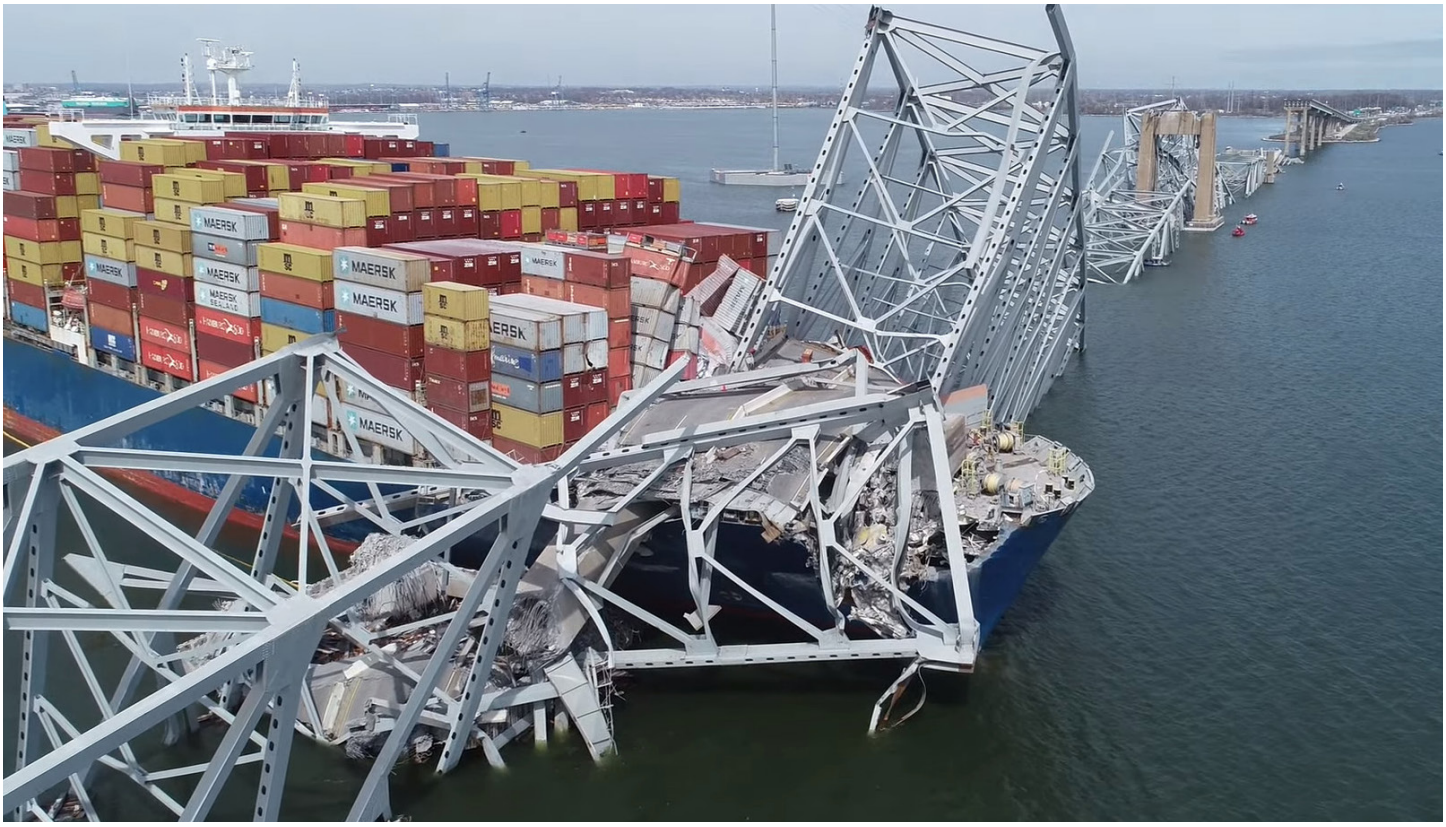

Photo credit: ntsb.gov

to multiple recurrent hazards that could interact dynamically with each other, causing a major challenge in determining an optimal maintenance policy from a holistic perspective. In a recent work of Liao and his collaborators, they modeled the resilience of a system with one or multiple performance measures under dependent recurrent hazards and developed optimal preventive maintenance policies for system operators with different risk preferences. To this end, they characterized a set of hazards, for which the occurrence frequency and severity of one hazard may be influenced by other hazards. They modeled the resilience of the system exhibiting a multimodal availability behavior because of dependent recurrent hazards. To obtain the optimal maintenance policies for risk-neutral and risk-averse decision makers, several computational algorithms were developed to efficiently sample typical hazard scenarios and search for the optimal solutions. A case study on the underground pipeline system in Pennsylvania and New York was provided to illustrate the application of the proposed resilience assessment and maintenance optimization methods.

The U.S. inland waterway transportation system (IWTS) is an essential part of the country's multimodal freight transportation network. In addition to seasonal droughts and floods, the operations of the IWTS may be disrupted by random malfunctions and scheduled maintenance of its critical components. Among those critical components, locks play a key role in the operation of navigable inland waterways, and lock-induced disruptions to the supply chains of related industries, such as agriculture and manufacturing, often result in significant economic losses. This is extremely important to the State of Arkansas as agriculture is the state's largest industry, adding around $16 billion to the state's economy annually. To assess the performance of the U.S. IWTS, Liao's team developed a PyNetLogo simulation tool to capture the movements and delays of cargoes under various operational uncertainties. Using this simulation tool, a lock repair and preventive maintenance strategy can be determined via Deep Reinforcement Learning to minimize the loss due to lock-induced disruptions. To illustrate the proposed modeling and decision-making method, the McClellan-Kerr Arkansas River Navigation System was considered in their study, where a random policy and a first-come, first-served policy conventionally implemented in practice were also presented for comparison. Their results show that the optimal strategy obtained by their proposed approach outperforms the conventionally implemented alternatives in various aspects. Most importantly, the levels of availability of all the locks are significantly improved, enabling a more seamless cargo flow along these navigable inland waterways.

RESEARCH IN THE NEWS

Researchers Receive $5 Million Award to Develop AI Platform to Strengthen Regional Food Systems

The University of Arkansas is among the seven elite teams advancing to Phase 2 of the National Science Foundation (NSF) Convergence Accelerator program. This phase involves a $5 million investment dedicated to developing an AI-driven platform, Cultivate IQ, aimed at bolstering regional food systems.

The NSF, in collaboration with the U.S. Department of Agriculture (USDA), is prioritizing the development of new technologies to tackle the intricate challenges associated with food and nutrition insecurity. These challenges stem from population growth, increasing diet-related diseases, health disparities, and the need for climate resilience. The focus is particularly on meeting the needs of vulnerable and disadvantaged communities.

Cultivate IQ, led by the Institute for Integrative and Innovative Research (I^3R) at the University of Arkansas, is an AI-powered platform designed to enhance the resilience of regional food systems and support smaller farms. The project is headed by Meredith Adkins, Ph.D., an assistant research professor at I^3R. The multidisciplinary team includes experts from the University of Arkansas, University of Florida, and University of Wisconsin-Madison, along with local industry partners Cureate and Junction AI.

Core Team Members:

- Meredith Adkins, Ph.D. (PI): Assistant Research Professor, I^3R
- Kristen Gibson, Ph.D. (Co-PI): Professor, Department of Food Science, and Director, Center for Food Safety
- Thi Hoang Ngan Le, Ph.D. (Co-PI): Assistant Professor, Department of Electrical Engineering and Computer Science
- Trey Malone, Ph.D. (Co-PI): Assistant Professor, Department of Agricultural Economics and Agribusiness
- Chase Rainwater, Ph.D. (Co-PI): Chair, Department of Industrial Engineering
- Kim Bryden: CEO, Cureate
- Vance Reavie: CEO, Junction AI
- Philip Sambol: Project Manager, I^3R

Cultivate IQ harnesses the power of artificial intelligence and machine learning to integrate sales and production data across the farm-to-market supply chain. This integration aids in planning and managing regional food supplies. By providing local food buyers, aggregators, and distributors with access to market insights, production planning tools, and purchase orders, the platform empowers producers to better align food supply with demand.

This data-driven approach helps prevent both overproduction and underproduction, minimizing food loss and opening new market channels for smaller farms. In Arkansas, where agriculture is the leading industry, this initiative is particularly significant. The Arkansas Delta is among the most fertile agricultural regions in the country, and Northwest Arkansas hosts a high concentration of small-scale farmers.

The NSF's initiative aims to transform food systems across the United States, ensuring access to healthy, safe, and affordable food. The program promotes sustainable agricultural practices that consider climate resilience, regeneration, and waste reduction. This mission aligns with the USDA's core priority of guaranteeing equitable access to nutritious food for all.

In Phase 1, teams underwent a nine-month innovation curriculum by the NSF Convergence Accelerator, transforming initial ideas into proof of concepts. They acquired skills in communication, storytelling, pitching, and partnership development. As they move into Phase 2, the focus will be on developing their solutions into prototypes, building strong partnerships, and establishing sustainability plans beyond NSF support. This phase includes collaboration with NIFA at USDA, which provides leadership and funding for advancing agriculture-related sciences.

Cultivate IQ represents a significant stride towards resilient and sustainable food systems, with the potential to revolutionize the agricultural landscape, particularly for small-scale farmers in Arkansas and beyond. Offering transparency and useful information across the food supply chain, this tool will allow farmers to know what to grow, how much to grow, and who to sell it to.

Delia Garcia, director of strategic communications
Institute for Integrative and Innovative Research (I^3R)

Empowering Engineering Students: The Impact of ePortfolios and the Biggadike Innovation Grant

In December 2022, the College of Engineering announced the inaugural recipients of the Biggadike Innovation Grants (BIG). Brandon Crisel, instructor and adviser in the Department of Industrial Engineering, was one of those inaugural recipients.

With his grant, Crisel established ePortfolios for students. A purposeful collection of sample student work, ePortfolios include examples that highlight students' learning progression, achievements and evidence of what they can do.

"Through discussion with industry representatives and reading through case studies, it was apparent that ePortfolios are a valuable tool for both job seekers and employers," Crisel said. "While they are only just starting to gain traction in industry, we predict that they will become common practice. Through this project, students get ahead of the game and are preparing their portfolio while projects and college experiences are actively happening and fresh on their minds."

In early 2023, Crisel and a team of students participating in the project completed research on technical platforms, industry standards, stakeholder buy-in and what makes relevant content for an ePortfolio. In summer, they began creating a series of modules directed at developing an independent learning process for students to build their own ePortfolios.

The team has developed assignments to accompany the learning modules and has begun presenting these assignments to students. During the fall semester, they improved and expanded the materials, achieving more widespread engagement in the Department of Industrial Engineering and the College of Engineering.

Two of Crisel's initial students, Alyssa Ball and Jacob Holmes, presented their work at the 2023 ASEE Midwest Conference held at the University of Nebraska.

Ball said, "The driving motivation behind the project is the empowerment of engineering students and, while tackling an objective like this seemed intimidating at first, contributing to the innovation and advancement of the engineering student community at the U of A is quite rewarding."

Holmes echoed Ball's comments. "I believe the ePortfolio curriculum will be very beneficial to students wanting to demonstrate their work to employers. This research is already being implemented and will hopefully be applied to courses across the College of Engineering," he said.

Kevin Hall, associate dean for academics in the College of Engineering, expressed his excitement about the ePortfolio project.

"The benefits of a student ePortfolio system are substantial. This allows students to truly showcase their knowledge, skills and abilities far beyond a bare recitation of traditional metrics such as GPA and course listings. We certainly hope that the results of Mr. Crisel's work will be considered by all departments across the college," he said.

The Biggadike Endowment for Teaching and Learning was established in 2014 through the generosity of Robert H. Biggadike, a 1958 graduate of the mechanical engineering program at the University of Arkansas. Its purpose is to promote student success through innovation in curriculum, classroom instruction and student support. The endowment provides resources to ensure University of Arkansas engineering graduates are thoroughly equipped to tackle the challenges facing society in the 21st century.

DEPARTMENT NEWS

Dean Honored as Distinguished Alumna

College of Engineering Dean Kim Needy was among seven alumni honored in April as part of the 2024 Class of Distinguished Alumni for the University of Pittsburgh Swanson School of Engineering.

The school celebrated the new class of honorees at a dinner and awards ceremony April 10 at the campus' University Club.

A native of Pittsburgh, Needy earned a Bachelor of Science and Master of Science in industrial engineering from the Swanson School of Engineering in 1984 and 1987, respectively. She earned her Ph.D. at Wichita State University.

"In industrial engineering and engineering education far and wide, Dr. Kim Needy is well known and highly regarded, especially here at her alma mater," said Lisa Maillart, interim department chair of industrial engineering. "Kim is a Pittsburgh homer ... She is also a valued mentor and role model for women engineers throughout academia."

Graduate Dean Elected to Leadership Position in IISE

Ed Pohl, dean of the Graduate School and International Education, has been elected as senior vice-president for academics of the Institute of Industrial and Systems Engineers (IISE) and joined the Board of Trustees in March 2024.

In response to the notification of this news, Chase Rainwater, head of the Department of Industrial Engineering, commented, "Dr. Pohl is an elite leader within the industrial and systems engineering community. IISE is fortunate to have him serving as its newest vice president. His service continues a long tradition of University of Arkansas leadership in this organization."

"I am honored to be chosen to serve as senior vice president for the Institute of Industrial and Systems Engineers," Pohl said. "I look forward to working with the IISE leadership team and others across the organization to advance the industrial engineering field both nationally and abroad."

Burak Ekşioğlu Recipient of Fellow Award

Burak Ekşioğlu, professor of industrial engineering, was awarded the title of fellow at the annual conference of the Institute of Industrial and Systems Engineers held in Montreal, Quebec, Canada.

The honor recognizes outstanding leaders of the profession who have made significant, nationally recognized contributions to industrial and systems engineering. A fellow is the highest classification of membership in the institute.

Ekşioğlu's research is focused on the area of optimization with applications in transportation, logistics, supply chain management and healthcare.

His research has been sponsored by, among others, the U.S. Department of Transportation, U.S. Department of Homeland Security, NASA, and the industry. He is a member of the Tau Beta Pi Honor Society, INFORMS, IISE, ASEE and POMS.

In addition to this honor, Ekşioğlu was named the director of the College of Engineering's online Master of Science in Engineering program. The program is highly ranked among online graduate engineering programs by U.S. News and World Report.

Dean Kim Needy said Ekşioğlu will be an excellent leader for the popular and successful program.

"I am thrilled to have Dr. Ekşioğlu in this important position guiding one of our five online master's programs," Needy said. "His wealth of leadership experience and dedication to excellence will undoubtedly mean great things for the college, this program and our students."

Squires Elected Officer in International Organization

Alice Squires has been elected treasurer of the International Council on Systems Engineering (INCOSE) for a two-year term starting in January. Squires joined the Department of Industrial Engineering in May as a teaching professor, contributing to the Master of Science in Engineering Management and Operations Management programs.

A member of INCOSE since 2004, Squires is the founder of the INCOSE Empowering Women Leaders in Systems Engineering working group. The mission of the group includes creating an open systems engineering environment welcoming to all and engaging women in engineering and systems engineering at all levels of education around the world.

Assistant Professor Named Clemson's Young Alumni of Year

Rob Curry, assistant professor, was recognized in April at Clemson University with the prestigious Young Alumni of the Year Award. The award was presented during the Clemson University Industrial Engineering End of Year Celebration.

An alumnus of the Department of Industrial Engineering at the U of A, Curry joined the department as an assistant professor in 2023. 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 U of A.

Chimka, Rosales Named to Lead J.B. Hunt Center Focused on Supply Chain Innovation

The J.B. Hunt Innovation Center of Excellence, which seeks to develop innovative solutions to address emerging challenges and opportunities facing the transportation and logistics industry, is under new leadership.

Justin Chimka, associate professor of industrial engineering, was recently named director, while Claudia Rosales, an assistant professor of supply chain management, became co-director.

Established in 2017, the center is a collaboration between J.B. Hunt Transport Services Inc., the College of Engineering and Sam M. Walton College of Business. Its major activities this academic year are supporting three graduate students in engineering and computer science finishing their assistantships and master's projects at J.B. Hunt.

Engineering Professor Gives Keynote at International Symposium on Defense

The Instituto Tecnológico de Aeronáutica and the Brazilian Air Force held their 25th Annual Symposium on Operational Applications in Defense Areas at their São José dos Campos in September 2023.

An annual event, the symposium's objective is to create an environment of exchange of experiences

between the academic, industrial and operational sectors of the armed forces, on topics of teaching, research and development in areas of defense.

Greg Parnell, was the international keynote speaker at the conference. His topic, "Cognitive Biases and Decision Traps," illustrated the misuse of heuristics in decision making. The presentation was well received by over 500 attendees.

In addition, he gave a two-hour minicourse on "Value-Focused Thinking for Capability-Based Planning" that was attended by approximately 80 attendees. The topic was requested of Parnell because the Brazilian military uses capability-based planning for defense budget decisions.

Photo credit: University Relations - University of Arkansas

Originally known as University Hall, Old Main was constructed between 1873 and 1875.
It is the oldest building on the University of Arkansas campus and one of the oldest buildings in the state.

ACTIVE GRANTS

Hernandez, S. and **J. R. Chimka**, "Seat belt, motorcycle helmet and child restraint survey," Sponsored by Arkansas State Police, $452,064. (2021-2025).

Chimka, J.R., "J.B. Hunt Innovation Center of Excellence," Sponsored by J.B. Hunt Transport Inc., Industry, $96,932 (2023)

Ekşioğlu, B., S. Ekşioğlu, "An Analysis of Resource Utilization at Telehealth Providers in the US," Sponsored by University of Arkansas Medical Sciences, $50,000 (2023-2024)

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).

Braham, A., **H. Liao**, C. Murray, "University Transportation Center Program- Regional," Sponsored by Department of Transportation, Federal, $450,000, (2023-2024)

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., "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. (2019-2023).

Nachtmann, H. L., M. Barry, S. William, "Maritime Transportation Research and Education Center (MarTREC)," Sponsored by Department of Transportation, Federal, $3,000,000 (2023-2029)

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., R. Curry, E. Pohl, "BAA Proposal," Sponsored by U.S Army Corps of Engineers, Federal, $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. (2018-2023).

Pohl, E. A., K. M. Sullivan and H. Liao, "IAC MAC," Sponsored by Alion Science & Technology Corporation, Industry, $98,047. (2023-2024).

Pohl, E. A., Bob Beitle, C. Sides, Sponsored by National Science Foundation, $249,792, "I-Corps Commercialization STEP (STEM Training in Entrepreneurship Practices)," (2017-2024)

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, $621,891 year 4. (2020-2025).

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. (2020-2024).

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. (2019-2024).

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. (2017-2023).

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, $160,000.00, (2022-2024).

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).

Schubert, K. D., "Project Management Support for EPSCoR DART Project (Seed Funding - NSF EPSCoR DART Education Theme)," Sponsored by National Science Foundation, Federal, $10,721 (2022-2024).

Sullivan, K. M., "CAREER: Survivable, Maintainable, and Adaptable Sensor Networks," Sponsored by National Science Foundation, Federal, $500,000. (2018-2023).

Zhang, S., E. Specking, H. Liao, C. E. Rainwater, X. Wu, R. A. McCann, S. V. Hernandez, W. Zhang and Q. Li, "RET Site: Arkansas Data Analytics Teacher Alliance (AR-DATA)," Sponsored by National Science Foundation, Federal, $600,000 (2020-2024).

Wu, X., L. Zhang, **S. Zhang** and X. Liu, "Privacy Preserving and Fairness Aware Health Machine Data Analysis," Sponsored by West Virginia University, Institution of Higher Education, $200,000.00. (2019-2023). NSF Sub-award.

Catanzaro, D. G. and **S. Zhang**, "A Blood-based Multimetric Index to Predict Progression to Active Tuberculosis Disease," Sponsored by University of California, San Diego, Institution of Higher Education, $597,230.00 (2018-2024). NIH Sub-award.

Photo credit: University Relations - University of Arkansas

The University of Arkansas Campus boasts it's own aboreta. Featuring 480 trees from 73 different species, the fall season is magnificent!

FEATURED PUBLICATIONS

In 2023, the faculty of the Department of Industrial Engineering at the University of Arkansas contributed one book, four book chapters, 24 refereed journal articles and 14 other refereed publications and proceedings. The faculty authors are indicated in **bold**.

Book Published

Rossetti, M. D., *Simulation Modeling using the Kotlin Simulation Library* (KSL), 2023. https://rossetti.github.io/KSLBook/

Book Chapter

Specking, E. and G. S. Parnell, "Multiple Objective Decision Analysis." *Engineering Management Handbook*, 3rd Ed (pp. 105-116). American Society for Engineering Management. 2023.

Specking, E. and G. S. Parnell, "Single Objective Decision Analysis." *Engineering Management Handbook*, 3rd Ed (pp. 93-103). American Society for Engineering Management. 2023.

Parnell, G. S., N. J. Shallcross, E. Specking, E. A. Pohl and M. Phillips, "Role of Decision Analysis in MBSE". *Handbook of Model-Based Systems Engineering* (pp. 119-150). Springer, 2023.

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Photo credit: University Relations - University of Arkansas

Razorbacks abound at the University of Arkansas. You can find them in many different poses across campus. 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.

UNDERGRADUATE NEWS

IISE Chapter Gold Award

The student chapter of the Institute of Industrial and Systems Engineering (IISE) at the University of Arkansas hosted the IISE South-Central Regional Conference in spring 2024.

The conference was attended by 68 students from the University of Arkansas, Oklahoma State University, University of Oklahoma, University of Houston, University of Missouri, Kansas State University, Texas Tech University, and Wichita State University.

The IISE South Central Regional Conference is an annual highlight for student members, and this year's conference was a resounding success. The hard work and dedication of the IISE Chapter Officers at the University of Arkansas was evident throughout the event, showcasing their commitment to excellence in the field of industrial and systems engineering.

As evidence of the success of the event, the University of Arkansas chapter was the recipient of the Chapter Gold Award.

IISE 2023-2024 Officers
Lauren Jones, Karleigh Eoff, Blake Sooter, Caleb Mallett, Adam Maxwell and Stella Chaney.

Student Awards Spotlight

In May 2024, the department recognized students at the annual Industrial Engineering Student Awards Banquet.

The Outstanding Senior Award is intended to recognize the most outstanding undergraduate industrial engineering student who graduated in fall 2023 or is graduating in either spring or summer 2024.

This year's Outstanding Senior is Blake Sooter, who has compiled an impressive variety of achievements during his time on campus. He was selected as the ArcBest Outstanding First Year Industrial Engineering Student in 2021 and shortly after began working as an undergraduate research assistant for the Center for Advanced Spatial Technologies. His research accomplishments include receiving multiple Honors College Research Grants, publishing in the IISE Conference Proceedings, and winning the Undergraduate Research Award from the IISE Operations Research Division. He has served as an undergraduate teaching assistant for two years, twice being recognized as the department's Outstanding Undergraduate TA. He served as an IISE Student Chapter officer for three years, most recently as this year's IISE Student Chapter president, and was a key contributor to planning and hosting this year's IISE South Central University Regional Conference. Outside of the College of Engineering,

Sooter has completed multiple internships at Procter and Gamble. Look for his name throughout this report!

Also, during the annual Awards Banquet, the student service organizations recognize those students who went above and beyond in their service.

Alpha Pi Mu presented the Sophomore Scholar Award to Lauren Jones. The award recognizes outstanding academic achievement and is chosen with input from faculty who teach the sophomore-level courses.

Karleigh Eoff was the recipient of the Imhoff Distinguished Service Award, also presented by Alpha Pi Mu. Nominations for the award are solicited from the membership.

Seniors Of Significance

The Arkansas Alumni Association announced the 2024 Seniors Awards in May. 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.

Blake Sooter, 2024 Senior of Significance and Razorback Classic

Blake, an avid Razorback fan from Bentonville, Arkansas, has demonstrated a deep passion for the University of Arkansas community through extensive involvement and remarkable achievements during his undergraduate years. As the Institute of Industrial and Systems Engineers (IISE) student chapter president in 2023-24, Blake's leadership was pivotal in hosting the IISE South Central Regional Conference. His dedication extended to his active membership in Alpha Pi Mu, the industrial engineering honor society.

Blake's academic excellence was recognized through his status as an Honors College Fellow, the university's most prestigious undergraduate scholarship. His commitment to education was further evidenced by his role as an undergraduate teaching assistant for more than two years in the Computing Methods I/II course, where he earned the Outstanding Undergraduate Teaching Assistant award twice.

Under the guidance of Chase Rainwater, Blake conducted undergraduate research focused on optimization for last-mile delivery and other applications, supported by multiple Honors College research grants. His findings were showcased at the IISE Annual Conference in 2023. Additionally, he contributed as a research assistant at the Center for Advanced Spatial Technologies.

Blake led his capstone team, sponsored by Infinity Labs, to significant recognition. At the 2023 Capstone Symposium, their work on applying a Markov Decision Process to hiring decisions earned them the Outstanding Achievement in Modeling award and a selection for the IISE Annual Outstanding Capstone showcase.

Throughout his undergraduate career, Blake received numerous accolades, including Outstanding Freshman in Industrial Engineering (2021), Outstanding Undergraduate Teaching Assistant in Industrial Engineering (2023 and 2024), and Outstanding Senior in Industrial Engineering (2024). His distinction as a Razorback Classic by the Arkansas Alumni Association highlighted his status as one of the top 20 graduating seniors across all majors at U of A. He graduated Summa Cum Laude from the College of Engineering.

Blake gained valuable industry experience through three internships at Procter & Gamble, working in various divisions of the Supply Network Operations (SNO) organization in Fayetteville, AR, Cincinnati, OH, and Shippensburg, PA. He is set to further his education by pursuing an M.S. in Industrial Engineering at the University of Arkansas in Fall 2024.

Rachel Thomas, 2024 Senior of Significance and Razorback Classic

Rachel, a proud fifth-generation Razorback from Fayetteville, Arkansas, graduated with Highest Distinction from the University of Arkansas following in the footsteps of her mother and grandfather. Her senior year saw her honored as a member of the 2023 Homecoming Court.

Throughout her undergraduate career, Rachel actively contributed to the Department of Industrial Engineering. She served as Secretary and Treasurer for the Arkansas chapter of the Institute of Industrial and Systems Engineers and as Media Chair for the Alpha Pi Mu. Her commitment to education was further demonstrated by her role as an undergraduate teaching assistant under Tish Pohl, supporting courses in Facility Logistics and Work Methods and Ergonomics.

In her senior year, Rachel led a capstone project partnered with J.B. Hunt Final Mile. Her exemplary leadership earned her recognition as an Outstanding Team Leader, and her team received the Project of the Year Award. Additionally, the team were semi-finalists in the National IISE Outstanding Senior Design Competition, ranking among the top 20 teams. Her academic excellence was acknowledged by the College of Engineering, which named her a First-Ranked Senior Scholar. She also received the Hytrol Challenge Award and the Industrial Engineering Outstanding Sophomore Award.

Rachel's involvement on campus extended beyond academics. As a member of the Delta Delta Delta Sorority, she served as Director of Philanthropy and Director of Member Selection. In her role as Philanthropy Director, she led her chapter in raising over $60,000 for St. Jude Children's Hospital through various events and partnerships with local businesses. Her contributions were recognized with the Panhellenic Council's Major Greek Award and the Scholastic Woman of the Month Award.

After her junior year, Rachel interned with MasterCard as an Associate Consultant Intern in Data & Services. This fall, she will return to MasterCard as an Associate Consultant on the Business Experimentation Track while planning to pursue a master's degree concurrently with her full-time work.

Zayna Abu-Safe, 2024 Senior of Significance

Born and raised in Fayetteville, Arkansas, Zayna has a rich family legacy at the University of Arkansas, with both her parents and two older sisters being proud alumni. Inspired by her sister Nour, Zayna chose to pursue a degree in industrial engineering, a decision that shaped her academic journey.

Zayna's time at the University of Arkansas was marked by her active involvement in various organizations and roles. She was a dedicated member of the National Society for Black Engineers, where she contributed to promoting diversity and inclusion within the engineering field. Additionally, she played a vital role in the Office of Career Connections as a Social Media Career Ambassador and Career Peer Mentor, helping fellow students navigate their career paths and enhance their professional skills.

Zayna gained practical experience through various internships and projects. As a Data Analyst Intern with the College of Engineering, she honed her analytical skills and contributed to important data-driven projects. She also showcased her versatility by driving a golf cart for the Fowler House during football season.

In her senior year, Zayna worked with J.B. Hunt on a Capstone team, focusing on improving the zone definition process using clustering and optimization techniques. Her team's outstanding efforts earned them the Project of the Year award. Further professional experience included a Project Engineering Internship with Phillips-Medisize, where she applied her engineering knowledge to real-world challenges.

As a graduate, Zayna is embarking on a new chapter in her career as a Quality Engineer in the Engineering Development Program at Georgia-Pacific. This opportunity with Koch companies, which she connected with at the STEM Fair, promises to be an exciting and fulfilling continuation of her engineering journey.

Engineering Excellence: The Journey of Twins Joshua and Luke Smith in Industrial Engineering

Industrial engineering graduates Joshua and Luke Smith secured positions with Lockheed Martin. As twins pursuing similar career paths, their journey — though not initially planned — showcases the power of familial influence, individual growth and the undeniable connection between siblings.

The story begins with the two navigating the uncertainties of their freshman year during the height of the COVID pandemic. Initially drawn to different engineering disciplines, the twins found themselves contemplating chemical and mechanical engineering after watching virtual presentations about the various engineering options. In the end, they shared the decision that industrial engineering was a better fit for their strengths and personalities.

Joshua's Story

Joshua's journey into industrial engineering took a slightly different route. He knew he wanted a STEM degree, starting with chemical engineering, before finding his true calling during his freshman year. Despite not planning to enter the same field as his brother, Joshua found himself immersed in industrial engineering.

Joshua's interests in data analysis, production, productivity improvement, databases and engineering management resonate well with the multidisciplinary nature of industrial engineering. His partnership with Luke on various group projects showcased their complementary skills, with Luke excelling in databases and the programming language SQL, while Joshua delved deeper into the data analysis tools Tableau and Excel.

Their internships at Lockheed Martin, though separate, allowed them to leverage each other's strengths, laying the foundation for continued collaboration post-graduation. Joshua emphasizes the networking benefits of being twins, providing mutual support and assistance at work.

Expressing his overarching career goal, Joshua simply states, "Enjoy what I do, and if I am making a good living, I can't ask for much else." Joshua also emphasizes the importance of making connections as the most valuable lesson from his academic and professional journey, stressing that these connections and shared moments outside of work and school contribute to a more enjoyable and fulfilling career.

Joshua and Luke Smith

Luke's Story

Luke shares, "We didn't plan on being the same major or even attending the U of A together. It was the encouragement of our family that influenced our decision." Despite their initial divergence in choices, Luke found his calling in industrial engineering after completing his freshman year. His interest was being a "floor" industrial engineer, where designing production layouts and processes to enhance productivity, reduce costs and maintain quality standards are the norm. This passion motivated his minor in engineering management, reflecting his goal of advancing into engineering management roles as he progresses with Lockheed Martin.

Having completed an internship with Lockheed Martin, Luke feels well prepared for his full-time position, citing the hands-on experience of working as a floor industrial engineer as a pivotal learning opportunity. His long-term goals align with Lockheed Martin's values of "Do What's Right," "Respect Others" and "Perform with Excellence."

Reflecting on his academic experience with the Department of Industrial Engineering, Luke also stresses the importance of building connections within the Industrial Engineering Department. "I feel these connections directly strengthened my teamwork and technical skills," a sentiment that extends to his internship at Lockheed Martin, where he found a supportive community eager to help him learn and grow.

INDUSTRIAL ENGINEERING

Senior Capstone Symposium

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

During the 2023-24 academic year, 42 industrial engineering seniors on nine teams participated in the Industrial Engineering Capstone Experience.

The teams work on project problems provided by industry partners. They begin their fall semester by getting to know their industry partner and the issues motivating the project. Students then perform preliminary analysis and define objectives for their spring semester work. They assess the potential impact of their work and create the deliverables that their industry partner will need 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 course sequence. Richard Cassady, University Professor of industrial engineering, coordinates the Industrial Engineering Capstone Experience courses.

The experience concludes with the Industrial Engineering Capstone Symposium each spring. This year the following projects were featured in the symposium.

Award Winning Projects

- Project of the Year: Delivery Zone Definition with K-Medoids Clustering and Integer Programming
  Team: Rachel Thomas, lead, Zayna Abu-Safe, Bennett Foret, Trent Sawyer and Luke Smith.
  Supported by J.B. Hunt.
- Outstanding Achievement in Data Analysis: Forecasting Backlog of Cross-Dock Operations Using Regression and Machine Learning Algorithms
  Team: Marshal Ray, lead, Maryanne Attee, Jacob Dixon, James Jett and Seth Turner.
  Supported by ABF Freight.
- Outstanding Achievement in Modeling: Applying Markov Decision Processes to Optimize Aggregate Workforce Planning with Uncertain Funding Conditions
  Team: Blake Sooter, lead, Katie Augsburger, James Fite, Nathanael Harris and Deniz Vural.
  Supported by Infinity Labs LLC.
- Outstanding Achievement in Decision Support: Improving Chicken Breast Production Scheduling through Pareto Optimization with VB.NET
  Team: Addison Standridge, lead, Carter Baldwin, Kevin Connelly and Joshua Smith.
  Supported by Simmons Prepared Foods.

Individual Awards

- Outstanding Team Leaders: Karleigh Eoff, Lathan Gregg and Rachel Thomas.
- Outstanding Team Members: Katie Augsburger, Carter Baldwin and Luke Smith.
- Outstanding Faculty Advisers: Justin Chimka, Rob Curry and Kelly Sullivan.
- Outstanding Industry Partners: ArcBest, J.B. Hunt and Marco.

Other Projects

- Project Title: Designing a User interface with Excel VBA to Generate Rate Increases for Existing Low-Risk Accounts
  Team: Ellen Timmerman - lead, Natalie Hernandez, Kaden Jones and Elias Theodore.
  Supported by: ArcBest.
- Project Title: Improving Radiology Productivity by Optimizing Planned Staffing Levels and Supporting Real-Time Adjustments
  Team: Karleigh Eoff - lead, Charles Eason, Weston Harp, Du'Maurier Looney and Joshua Peetoom.
  Supported by: Baptist Memorial Healthcare

Corporation.

- Project Title: Allocating Truck Yard Resources and Reducing Bobtail Miles
  Team: Kate Bowden - lead, Riley Baker, Mackenzie Frederick, Hector Santillan and Santiago Schrader.
  Supported by: J.B. Hunt Transport Services, Inc.
- Project Title: Improving Table-Pack Work Cell Efficiency Using Intrinsic Motivation and Lean Manufacturing Principles
  Team: Gabe Hesington - lead, Mitchell Cooksey, Joshua Jowers and Caleb Morris
  Supported by: Marco
- Project Title: Enhancing Automation Decisions Using Power BI Analysis and Linear Programming
  Team: Lathan Gregg - lead, Sebastian Alborta, Austin Easley, Ashwin Narayan and Seth Rosenfeld
  Supported by: Tyson Foods

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 2023-24, four undergraduate students completed the Honors College experience in our department:

Student	Thesis Title	Adviser
Lathan Gregg	Evaluating North American Professional Sports League Season Formats Using Simulation	C. Richard Cassady
Joshua Jowers	Using Convolutional Neural Networks for Autonomous Drone Navigation	Chase Rainwater
Ashwin Narayan	Quantifying Infrastructure Criticality for an Inland Waterway Transportation Network using Agent-Based Simulation	Haitao Liao
Blake Sooter	Open Source Optimization for Green Last Mile Delivery and Other Applications	Chase Rainwater

Photo credit: University Relations - University of Arkansas

The University of Arkansas boasts one of the most unique traditions found on any campus: Senior Walk. Consisting of miles of campus sidewalks engraved with the names of our graduates and dating back to the first graduating class in 1876, Senior Walk is concrete proof of the university's commitment to students.

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
- Computing Methods
- Statistical Modeling

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

Camila Schrader

MS, Operations Analytics | 2023

> Given the flexibility of the program (8-week courses and 100% online), I was able to complete my Master's while working full-time. Taking the OPAN courses while working full-time was extremely beneficial because it allowed me to get deeper understanding of the different analytical techniques and how they apply directly to my job.

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GRADUATE STUDENT NEWS

From Xinjiang to Arkansas: Fan's Journey and Future in Academia

Fan was born in the picturesque region of Xinjiang, China. His academic journey began at Beijing Jiaotong University, where he earned his bachelor's degree. His quest for higher education took him to Warwick University in the UK, where he completed his master's degree.

When it came time to select an institution for his doctoral studies, Fan engaged in extensive research, watching numerous introduction videos online. Both he and his wife were drawn to the quiet beauty of Arkansas, which played a significant role in their decision-making process.

Fan was particularly attracted to the Department of Industrial Engineering at the University of Arkansas. "The department's high ranking and the generous offer were very appealing," Fan noted. He was impressed by the significant contributions each professor had made in their respective fields, which further solidified his choice.

Before embarking on his doctoral studies, Fan worked in an automotive factory for a couple of years. This experience underscored the importance of a comprehensive understanding of project management to meet industry needs. It was this realization that motivated him to delve deeper into the fields of optimization and scheduling processes, leading him to pursue a Ph.D. in industrial engineering.

Advised by Heather Nachtmann, Fan found the faculty at the University of Arkansas to be exceptionally supportive of his academic and research goals. "The faculty were always accessible and willing to offer guidance, whether through regular meetings, with feedback on my work, or advice on navigating my research projects," Fan shared. This supportive environment was crucial in helping him achieve his academic aspirations.

The mentorship Fan received from the faculty played a pivotal role in his professional development. "Their guidance has been instrumental in shaping my career aspirations," he stated. The professors generously shared their teaching philosophies, providing invaluable perspectives on creating a conducive learning environment, fostering critical thinking, and encouraging student participation. These insights significantly influenced Fan's approach to teaching and steered him towards a career in academia.

Fan also recalled how various faculty members shared their experiences and insights on work-life balance, stress management, and professional ethics. This holistic approach to mentorship not only enhanced his academic and professional skills but also contributed to his personal development. "They were available to help me understand the job market and how to prepare myself for it. I am especially grateful to many who served as my professional references and presented me with excellent job opportunities," Fan remarked.

After graduating in the fall of 2024, Fan will begin his new career with Texas Tech University in Lubbock, Texas. His journey from Xinjiang to Arkansas and now to Texas Tech University is a testament to his dedication, the invaluable support of his mentors, and his unwavering pursuit of knowledge and excellence in the field of industrial engineering.

The Doctoral Success of José Carlos

José Carlos Hernández Azucena's academic journey is a testament to perseverance, hard work, and the unwavering support of his family.

As an international student from El Salvador and the first in his family to complete a bachelor's degree, José Carlos' achievements reflect the sacrifices made by his grandparents and parents, "My parents and grandparents worked hard to give me access to a good education," José Carlos shared "It is through their support and various scholarships that I have been privileged to obtain my doctoral degree."

Six years ago, José Carlos began his academic journey at the University of Arkansas (UofA), where he pursued both his master's and doctoral degrees in industrial engineering. He credits much of his success to the guidance and support of his advisor, Haitao Liao, whom he describes as "patient, nurturing, and supportive."

"My decision to join the University of Arkansas was influenced heavily by a dear friend, Dr. César Ruiz," José Carlos explains. Ruiz, who also completed his Ph.D. at the UofA, recommended the department to him. It was the positive experience and academic support he experienced that motivated José Carlos to embark on his own academic adventure. José Carlos shared, "The decision to pursue graduate studies and a career as a researcher has been immensely rewarding, providing numerous opportunities for personal and professional growth."

Throughout his studies, José Carlos faced moments of self-doubt regarding his ability to become a professor. "During my studies, there were times I doubted being able to become a professor, but with the support of the department, that dream is now a reality." He secured his current position with the help of Liao and his dissertation committee. "The interview process, which included creating research and teaching philosophy statements and participating in online and on-site interviews, was a significant period of self-discovery and confidence-building," said Azucena.

Navigating academic life in the United States presented its challenges, but it also offered numerous opportunities for growth. "The experience was strenuous and exhausting at times, yet ultimately rewarding and fulfilling," he reflected.

Beginning his faculty position with the North Carolina Agricultural and Technical State University (NCAT) in the fall, as an assistant professor, he will draw on his own experience to guide and mentor students from diverse backgrounds, helping them achieve their career goals becoming well-rounded researchers and professionals.

José Carlos Hernández Azucena's journey underscores the transformative power of education and the impact of supportive mentors and institutions. His story is one of resilience, gratitude and the pursuit of excellence, inspiring future generations to follow in his footsteps.

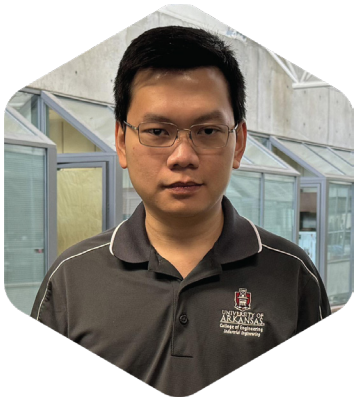
Study International

Doctoral Candidate Successful at Arkansas Bioinformatics Consortium 2024

Hieu Bui, a doctoral student, competed in the Arkansas Bioinformatics Consortium 2024 Conference held in Little Rock, Arkansas.

The consortium is a state-centric scientific community. Its mission is to develop, leverage and enhance bioinformatics expertise and resources to solve public health challenges. The conference for 2024 focused on the topic "Real-World Impact of AI."

Bui, who is advised by Sandra Ekşioğlu, associate dean for research, received third place recognition in the Best Poster Award, Graduate Student category, for his poster titled, "Tackling Vaccine Hesitancy Via Analytical Models." By utilizing a modeling approach to capture changes in vaccine hesitancy over time, his research highlighted the need to decrease vaccine hesitancy to improve health outcomes, the importance of fast and effective



vaccination programs and the critical role of sufficient hospital beds and ventilators in reducing mortality.

Annual Departmental Graduate Awards

The honor of Outstanding Graduate Student for 2023 went to Maryam Kheirandish, advised by associate professor Shengfan Zhang. Kheirandish has conducted research in statistical learning and stochastic decision making with an emphasis on healthcare applications. During her time as a Ph.D. student, she has published one journal article and submitted another that is under review. Her work has received multiple recognitions, including winning the 2023 INFORMS Minority Issues Forum poster competition and being named a finalist of the 2023 IISE Data Analytics and Information System Division data challenge competition. She was also selected as a recipient of the IISE John L. Imhoff Scholarship.

In addition to her research, she has served as an instructor for the Applied Probability and Statistics for Engineers II course and as a teaching assistant on multiple occasions. She also served our department as INFORMS chapter president for the 2022-2023 academic year.

The 2023 Graduate Research Award was presented to Farid Hashemian. With his adviser, professor Haitao Liao, Hashemian has been conducting research in data-driven decision making and solving real-world problems using machine learning, data analysis and optimization. His work focuses on network reliability analysis and maintenance decision making with applications to critical infrastructures, including the inland waterway transportation system.

In 2023, Hashemian published papers in the *Proceedings of the 2023 Winter Simulation Conference* and the 2023 Reliability and Maintainability Symposium. He received both the 2023 Stan Ofsthun Award from the Society of Reliability Engineers and the 2023 Thomas L. Fagan, Jr. Student Paper Award at the Reliability and Maintainability Symposium, and he was a finalist for the 2023 IISE Data Analytics and Information Systems Division data challenge competition.

INFORMS Chapter Recognized

At the INFORMS Annual Meeting in October, the U of A INFORMS Student Chapter received Honorable Mention in the Student Chapter Annual Awards.

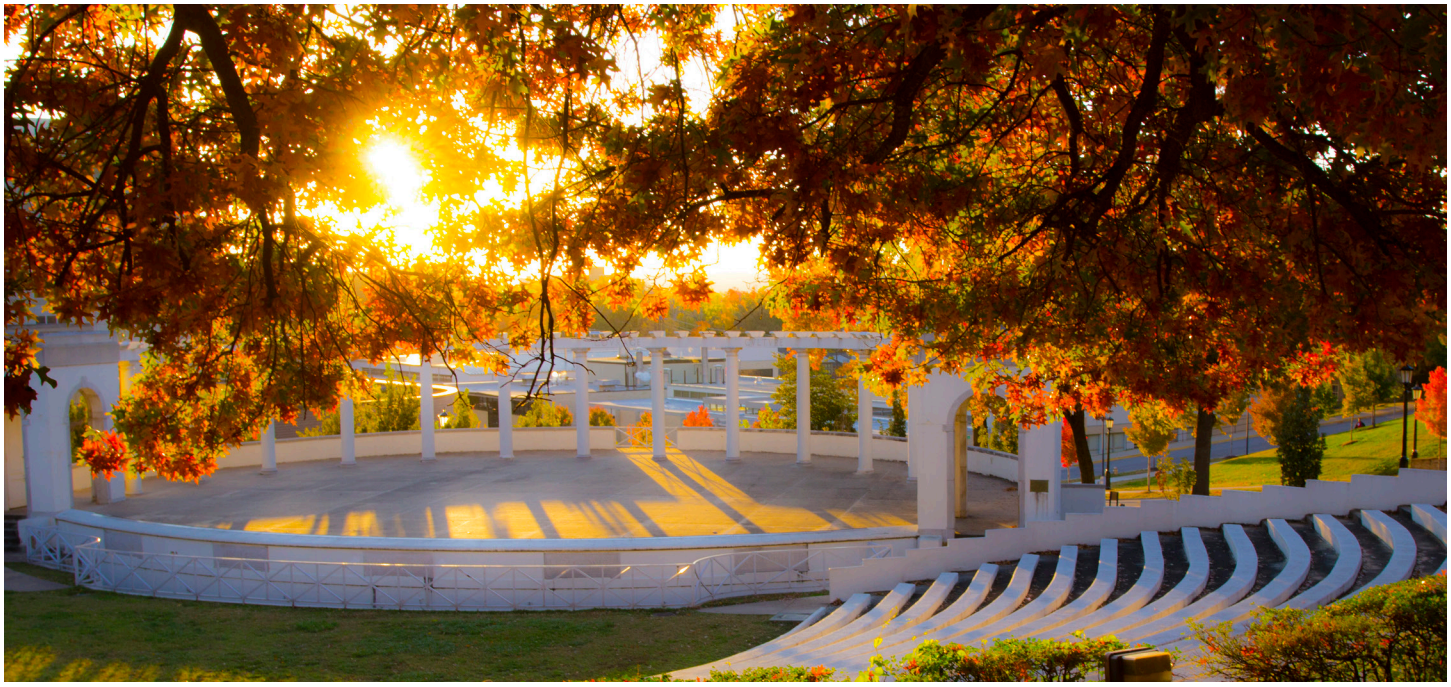


Photo credit: University Relations - University of Arkansas

The Greek Theatre has been used throughout its 85-year history for commencements, convocations, concerts, dramas and pep rallies. The iconic structure was built in 1930 and was given to the university by the national Chi Omega Fraternity, which was founded on the University of Arkansas campus in 1895.

MSOM/MSEM PROGRAM OVERVIEW

Operations Management, Engineering Management Master's Programs Welcome New Director

The Operations Management and Engineering Management programs are proud to announce a leadership transition. Greg Parnell, who has served as the director for the past 10 years, has stepped down and David Paulus assumed director position in May.

Paulus joined the U of A in fall 2023 as a professor of practice in industrial engineering and served as the co-director of the two graduate programs.

Chase Rainwater, head of the Department of Industrial Engineering, which houses the programs, shared his outlook of the transition in his announcement to staff. "I am confident that David is someone who will continue to guide these programs along the exceptional trajectory established by Dr. Greg Parnell and Dr. Ed Pohl over the last 15 years," Rainwater said.

Paulus earned his bachelor's degree in mechanical engineering and his master's degree in industrial engineering at the University of Tennessee. He earned his doctorate in mechanical engineering at Colorado State University. Before joining the faculty in Fayetteville, he was an assistant and then associate professor of mechanical engineering at the University of Arkansas - Fort Smith and an associate professor in the engineering and technology management online master's degree program for Washington State University.

His doctoral research interests focus on developing a computer-controlled resistance exercise system to counter the adverse physiological adaptations of space flight, including bone density loss and muscle atrophy. He continued the research with funding from the Arkansas Space Grant Consortium and then with NASA funding from Phase I, II and III Small Business Innovation Research (SBIR) with Streamline Automation in Huntsville, Alabama.

The inventor and lead engineer developing the compact Controlled Resistance Exercise Device (C-RED) that programmed electric motor resistance to simulate the inertial loading of free-weights, Paulus has worked closely with NASA Johnson Space Center performing prototype testing and biomechanical evaluations.

Paulus is a professional engineer in the state of Arkansas, a Certified Professional in Engineering Management and a Certified Human Factors Engineering Professional. He has been an engineering consultant for Paulus Consulting LLC since 2012 in areas related to industrial and mechanical engineering, including human factors and intellectual property.

Parnell will continue to serve as a professor of practice for the two graduate programs.

Master's Degree Evolves with Distance Education

Beginning in 1974, the Master of Science in Operations Management (M.S.O.M.) mastered the art of distance education at the U of A.

In the early days of its 50-year history, the degree program offered by the College of Engineering sent faculty members in U of A aircraft to teach at military bases. Next, it mailed VHS cassette tape-recordings of courses to military personnel for studying anywhere in the world they were deployed.

Rich Ham, associate director of the program, heard stories of missileers taking study materials into their silos. Graduates include not only captains of industry, Ham said, but two- and three-star generals. A recent graduate became the first woman commander of the Navy's USS Constitution in 2022.

As it matured, the program hired local instructors to teach at military bases in three states. Later, the program expanded with faculty members creating online courses that working professionals can take during pockets of time in their work and personal lives. Today, the program can be completed 100% online, but students can also take some in-person classes on the Fayetteville campus, if that suits them.

The largest graduate program offered by the university, M.S.O.M. enrolls more than 600 students currently, and about 180 students graduate each year. "We were seeing other programs move online, and we knew that was the future," said Ed Pohl, former director of the M.S.O.M from 2007 to 2014. "The writing was on the wall. The internet was going to make it so much more accessible to deliver distance education. So, we worked hard to get in at the front end of that for our program."

"During my time there, we transitioned into the actual online space, working to develop online courses, and we worked closely with Global Campus to make that happen," Pohl continued. "They were a big help in terms of helping us transition to what's now almost a fully online program."

Putting Practice to Work

Pohl, now the dean of the Graduate School and International Education, attributes the program's success not only to its flexibility of delivery but also to the broad scope of work a graduate can do with it.

"You can work in retail, you can work in health care, you can work in the Department of Defense," Pohl said. "It's a broad set of skills that have application in virtually any industry."

The program's tagline — Learn it Today. Use it Tomorrow — also illustrates one of its attributes, Pohl said.

"This program focuses on developing students to practice what they learn right away," he said. "We focus on giving students a toolkit and equip them to go out and use these tools to make contributions to an organization immediately after they take a class or complete a degree. We're trying to give them tools that help them make their companies and organizations operate more efficiently. I think it does a great job providing folks with skills they need to be successful in today's marketplace, and the program does an excellent job at updating their curriculum and making sure it stays current."

Every year, Derek Martin, president of Malone's Aerospace Holding with facilities in Oklahoma and Texas, recommends that some of his employees enroll in the M.S.O.M. program, whether they work in the supply chain, project management or engineering areas of the company that does CNC machining and assembly for military and defense aerospace applications.

The program's tagline — Learn it Today. Use it Tomorrow — also illustrates one of its attributes, Pohl said.

"And I'm proud to say several of the folks that I've worked with or that worked for me have completed the program," said Martin, who earned the degree in 2013. "Practicality is one of the program's strongest selling points. It's the opposite of a program in which you must take certain classes and not use them in your daily work life, because you can customize this program with the variety of classes that are available. You can really select something that is going to be applicable and beneficial in your daily responsibilities."

Degree Customization

People with undergraduate degrees in any field can enroll; graduates have included those who majored in English, business, Spanish, fine arts, political science, and the list goes on. The program also attracts international students with STEM backgrounds, with many of them opting for on-campus courses because of student visa requirements.

M.S.O.M. focuses on areas such as project management, decision-making, leadership, supply chain management and quality management.

Instructor Phil Jones pointed out that prospective students understand they can customize the M.S.O.M. once they complete required core courses, a feature he believes makes the program one of the best of its kind.

"Students certainly can have a focus area ranging from human resource management and leadership to very technical, quantitative-type courses and interests to having a project management focus," Jones said. "I've had students make a complete career change as they finished this program. That's always fun to see."

Response to graduate certificates and micro-certificates the M.S.O.M. began offering online in 2017 has been phenomenal, in Parnell's words, with 954 awarded to date.

Instructor Expertise

The program takes special care to select faculty with significant industry and government experience to teach courses, Parnell said.

"I've had students make a complete career change as they finished this program. That's always fun to see."

Kerry Melton is one of several now full-time faculty members who started as an adjunct while continuing to work in the private sector. A strong desire to teach and work with students to help them grow academically and to help them start or advance their careers motivated him, he said, and winning the 2020 instructor of the year award in the program validated for Melton that he was meeting his goal of being a positive contributor to students and the program.

Parnell said instructors such as Melton, who worked in the private sector for more than 25 years, are dedicated to sharing their insights from projects in the real world.

Jones, who previously taught part time for 11 years during a 40-year career in the private sector, agreed.

"You have to focus on profit and loss or business strategy or leading projects outside of academia," Jones said. "Based on the feedback that I received from some of my students, they really appreciate the fact that we can provide real-world examples, not just third party, but something that we have actually done individually, how we did it, how we learn from it, mistakes that we made, successes that we saw and how to apply that to what students will be doing down the road someday."

The program has redesigned and updated every course, incorporating the latest body of knowledge, during the past decade, Parnell said. And, according to Pohl, bringing all adjunct instructors to campus once during each summer also sets the M.S.O.M. apart.

"We wanted to develop a linkage between the folks who are teaching the same course at different places or online so we can share best practices and have some consistency," Pohl said. "You want a course to be tailored to the instructor, but we all have the same core syllabus and learning objectives. I feel like that really helped the program as well in terms of making it a better program for our students, making what the students get out of it more meaningful."

The program's makeup of eight-week courses also makes it special, Paulus said. It allows students to focus on a course, finish it quickly and move on. There's no coasting in an eight-week course, Jones said, so students tend to remain engaged throughout the length of the shorter course so that they don't fall behind without time to catch up as they might have in a traditional 16-week course.

Student Interactions

Adam Morris, a part-time instructor who also worked for four years as associate director of the M.S.O.M. program, has taught leadership and management courses for the past 12 years.

"One of my favorite jobs is teaching and, while I do this part time, it's probably my favorite thing to do because you truly get to interact with students," Morris said about the experience, despite the online delivery. "My class was often the last course a student had to take to graduate, and it was great to get that feedback from a student who may have been struggling in a management role, and the degree helped them clarify things. They tell me about promotions or getting new jobs. For me, it's the intrinsic value of seeing somebody progress in their career."

Reasons to Learn

Brandon DeVito of Benton, Arkansas, has had a new role with Entergy, which supplies electrical power to 3 million customers in four states, and is dedicated to the company, which he joined 14 years ago. DeVito, senior manager of environmental health and safety management and audits, graduated with his M.S.O.M., and he interviewed for a different position within Entergy recently. He believes the degree is ideal for aspiring leaders.

"I pulled what I learned from strategic management courses into that interview," said DeVito, who often studied from hotel rooms while traveling for work. "My vice president said, 'you are already putting (the knowledge) into use.'"

Gwendolyn Miller had a successful career in procurement for the federal government for more than 20 years after earning a bachelor's degree in political science, but she always wanted to go further in higher education.

"Many of my subordinates had master's degrees," she said from her home office in Kansas City, Missouri. "I often worked with project managers and program managers, sat in a lot of briefings hearing terms I didn't understand. To be an effective leader of a contracting organization that runs on project management principles, I needed to figure out project management and program management. I also needed to earn a degree in a way that made sense for me and fit into my schedule."

A mother of three, Miller took her iPad to tennis lessons and other activities so she could work on the degree, and her children didn't miss out on what they wanted to do.

Not every graduate was looking for career advancement. Ed Amass, a retired senior project manager for companies such as John Deere and Baldor Electric, wanted a challenge when he enrolled in the M.S.O.M. in his mid-50s, finishing in 2013. Amass had never taken an online class, and it was an adjustment for him, but he believes that flexibility is a big part of why the program is so popular.

"I think the success has a lot to do with how the program has evolved over time to serve remote students," Amass said. "How do we provide a service for those who can't get here? It's probably a great model for other universities and institutions to follow trying to serve those remote students, keep them engaged."

Active Alumni

Graduates often remain involved in the program, either teaching, making financial contributions or networking through the alumni association. The Amass family established a scholarship in the family name, and the College of Engineering created a faculty award named for alumnus Randy Roy.

Roy, a 1996 graduate, took classes at the Millington, Tennessee, military site while working as a FedEx executive at nearby Memphis. He was involved in one of the first tapings of a class, Introduction to Operations Management, in 2002, after he began teaching in the program. He liked the contrast with his corporate role where the emphasis was on financial gain for stockholders.

"Teaching was a way for me to invest in people," Roy said. "The highlight for me as a student was seeing instructors oriented toward education, not financial goals. The highlight for me as an instructor was seeing the world open up to students in new ways. Having students contact me long after they had graduated from the program and tell me how they advanced in their life and what the University of Arkansas means to them. That was a big deal for a guy like me with my nose in the corporate world."

Heidi Wells, Content Strategist
University of Arkansas – Global Campus

50th Anniversary Celebration

Master of Science in Operations Management celebrated its 50th anniversary on May 10, 2024, at the Janelle Y. Hembree Alumni House, in attendance were spring 2024 graduates, alumni, staff and faculty.

The graduate degree program which welcomed its first students in 1974, has grown to become the largest graduate degree program offered by the University of Arkansas.

The M.S.O.M. program is structured for the convenience of the working professional, a tradition that has been long-standing, even when online learning wasn't a popular trend in higher education. Over 6,000 students have graduated from the program, coming from diverse educational and professional backgrounds in Arkansas, the military and beyond. The curriculum emphasizes strategy, project management, leadership and the ten operations management decisions such as quality management, process design, location and layout strategy, human resources and supply chain to name a few.

The program motto is "Learn it Today, Use It Tomorrow," because it is designed for students to be able to immediately apply what they have learned in their workplace. Courses are eight weeks long and offered online five times per year, in addition to a few on-campus options. The program has three full-time online faculty and over 50 adjunct faculty with relevant industry, business or government experience.

"I offer my warmest congratulations to our exceptional M.S.O.M. program as it pauses to recognize a remarkable 50-year journey," said Kim Needy, dean of the College of Engineering. "This milestone is a testament to the dedication of our visionary faculty, the resilience of our students, and the transformative impact we've had on the careers of thousands of working professionals around the globe."

Beginning in fall 2017, additional programs were created to allow students to earn credentials while working toward their graduate degree. Today there are six graduate certificates and six microcertificates from which students can choose.

"It is incredible to be celebrating 50 years of the M.S.O.M. program impacting careers of thousands of students," said Chase Rainwater, department head of industrial engineering. "The program itself is an example of excellence in every way. The Department of Industrial Engineering is proud to have M.S.O.M. as a key part of our unit. We are grateful to all the faculty, staff and leadership that have worked hard for decades to ensure the sustained success of this program."

The graduate degree program welcomed its first students 50 years ago. Courses are offered in Fayetteville for international students, university employees, local workers and graduate transfer athletes. Today, there are two office locations in Fayetteville and Hurlburt Field, Florida, as well as an instruction site at The Collaborative in Bentonville.

Faculty, staff and alumni gathered at the Janelle Y. Hembre Alumni House to celebrate the 50th Anniversary of the program.

In the 2023-24 academic year, there were 568 unique students enrolled in the program and a total of 2,378 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 172 students completing their degree in the 2023-24 academic year bringing that to a total of 6,322 graduates of the MSOM program.

The Master of Science in Engineering Management program has continued its growth trajectory with 157 unique students enrolled, and a total of 333 enrollments for the year.

Scholarship Recipients Fall 2024

The program also offers current students two opportunities to receive scholarships for both fall and spring semesters. The award is based on academic achievement and financial need. The scholarship recipients were announced for the 2024-2025 academic year.

MSOM Scholarship Fund

Pablo Pineda was chosen to receive the M.S.O.M. Scholarship Award for Fall 2024. Pineda is originally from Bogota, Columbia and attended the University of Texas at Dallas earning a bachelor's degree in mechanical engineering. He is currently employed as a Project Engineering Manager for Darigold in Sunnyside, Washington. Pineda made the decision to attend the University of Arkansas to pursue the Master of Science in Operations Management because of its flexibility, affordability, courses offered and reputation. Starting his professional career as an Application Engineer for an HVAC manufacturer in Dallas, TX, he was quickly promoted to Project Engineer then to Sr. Project Engineer. This past year, after accepting his current position, he saw the need to pursue a graduate education.

Pineda said he was considering going to part-time with his studies due to financial challenges, but he says he's one step closer to achieving his academic goals by receiving this scholarship and can continue full-time. "I hope to continue strengthening my professional and personal skills in the field of operations management through this program. There were times when my dream of pursuing higher education seemed impossible, but the financial assistance provided with this scholarship has helped me tremendously and kept me going. I am deeply appreciative of the support", stated Pineda.

Pineda has set a goal for graduation in 2026 and he would like to continue to grow professionally and feels confident this will help him in the next steps of his career. Outside of work, one of Pineda's passions is soccer.

The M.S.O.M. Scholarship was first awarded in 2018 and is awarded each fall and spring semester. It is funded by generous donations from alumni, staff and friends.

The Amass Family Master of Science in Operations Management Award

The Amass Family Master of Science in Operations Management Award was awarded to Kristian Balli. Originally from Atlanta, GA, Balli had to pause his college education due to personal and financial reasons while pursuing his associate's degree in business administration from Georgia State University in 2016. Thankfully with the support of his family he was able to earn a bachelor's in business administration from the University of Central Arkansas in 2021, graduating magna cum laude.

This feeling of accomplishment gave him the motivation to seek out graduate programs that best fit his interests. After researching programs nationwide, he came across the M.S.O.M. program at the University of Arkansas, and it immediately piqued his interest. "I viewed this program as my ticket to excelling in my professional career and saw that the return on investment was unarguable", stated Balli.

In his professional career, he states he has had great mentors that exposed him to business operations from a young age. This led him to opportunities to work for start-ups and regional and international corporations that allowed him to work alongside people from across the world with diverse professional backgrounds.

Balli says although much of his professional career has been in the accounting and finance industry, he has held roles based around operations and customer service which is why the M.S.O.M. program was very appealing to him. "These operations and customer service-based roles have helped mold my mindset and appreciation for all that goes into managing a business and constantly looking for ways to improve processes. This, in turn, has led me to pursue the M.S.O.M. program at the University of Arkansas, says Balli.

After graduation, Balli plans to first see how he can improve his current organization with the knowledge he has gained of operations management and share it with others. Balli says, "I want to share it with other management personnel to show the importance of

good management and the influence it can have on the culture of the business and worker attitudes. In modern times, there needs to be a more progressive approach to how we form a strategy based on our workforce as much as we base it on the end goal of increased customer satisfaction and business growth."

As for the scholarship award, Balli says this will help alleviate much of the financial aspect and leave him with more energy to focus on his studies and achieving his goals. "I would like to once again extend my gratitude to the donors of the Amass Family M.S.O.M. Scholarship and the M.S.O.M. program staff for giving me this opportunity. This award will certainly go a long way in developing my operations management knowledge and pushing me closer to my career aspirations", says Balli.

The Amass Family Master of Science in Operations Management Award was first awarded in fall 2022. It is funded by a generous donation from Ed Amass family.

Annual M.S.O.M. & M.S.E.M. Meeting

The annual Faculty Meeting was held July 25-26, 2024, with over thirty in attendance, which 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. Blackboard gave a demonstration of Ultra and Respondus; and great discussions were had about the use of AI within the programs.

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

Nicholas Shallcross 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. Mr. Shallcross has redeveloped many courses and has been quick to volunteer ideas.

The Leonard Nethercutt Innovator of the Year award went to Kerry Melton. 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. Melton is solutions oriented, has a positive attitude and is always problem solving to improve how he presents his material in future terms.

Travis McNeal 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. Travis has a weekly meeting with his students to work through and talk through real-world examples and discuss what the topics really entail. 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. Julie Rogers of the Graduate School and

International Education was this year's recipient. Julie has played a key role in the success of the M.S.O.M. & M.S.E.M. programs. Her wealth of knowledge and expertise make her an indispensable asset, continuously enhancing our ability to serve our students effectively by providing invaluable support. Julie's adeptness in addressing a wide range of student concerns related to graduation and graduate studies is remarkable; her solutions are both insightful, reliable and elevate the quality of our programs.

Introducing A New Staff Member

Melody Miller comes to us as an Academic Advisor for M.S.O.M., bringing 20+ years of marketing, strategic planning, and editorial experience spanning consumer products, foodservice, ecommerce, as well as 10 years with an architectural and engineering firm. She holds a B.S. in Management from JBU and a Master of Science in Operations Management from the U of A.

Master of Science in Engineering Management Program Receives Prestigious ASEM Certification

The Master of Science in Engineering Management graduate program has achieved the distinguished status of a Certified Graduate Program by the American Society of Engineering Management (ASEM).

This prestigious recognition places the program among an elite group of only ten other programs in the country, affirming the excellence and rigor of its curriculum. ASEM's certification is a testament to the program's commitment to providing a cutting-edge education that equips engineering managers with the essential knowledge and skills they need. The rigorous standards set by ASEM are closely aligned with the Engineering Management Body of Knowledge, ensuring that the program meets the highest criteria for quality and relevance in the field.

This distinction highlights the program's exceptional standards and accomplishments. Graduates of the program can be confident that they are receiving a top-tier education that will prepare them for leadership roles in engineering management.

Moreover, this certification opens new doors for graduates by providing a direct path to professional certification. Graduates of the ASEM certified program are now eligible for recognition as a Certified Associate in Engineering Management (CAEM) or a Certified Professional in Engineering Management (CPEM), depending on their professional experience. This immediate recognition is a significant advantage, setting graduates apart in the competitive job market and enhancing their professional credentials.

The Master of Science in Engineering Management program's certification by ASEM underscores its dedication to excellence and its role in shaping the future leaders of the engineering management field.

Continued Growth

Since the beginning of the degree program in fall 2017, growth has steadily continued. The 2023-2024 academic year saw course enrollments 100% online. Thirty-nine students completed their degree, bringing the total to 142 graduates of the M.S.E.M. program.

ALUMNI HIGHLIGHTS

Hall of Fame Awards

College of Engineering alumni, faculty, staff and guests gathered Saturday, April 20, to induct two new members into the college's Hall of Fame and recognize 20 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 Malik Sadiq and Kelsey Zenko, with remarks by Terry Martin, provost and executive vice chancellor for academics, at the Fayetteville Public Library Event Center. Sadiq is chair of the college's Dean's Advisory Council and Zenko is chair of the Early Career Advisory Council.

"We're always honored to recognize our exceptional alumni, and this outstanding group of hardworking innovators inspires me to keep pushing the boundaries of what's possible in engineering education," Needy said. "These individuals' achievements reflect positively on our institution, community, state and nation."

The Hall of Fame inductee from the Department of Industrial Engineering was Bill Harrison (B.S.I.E. '66). Recognized as a distinguished alumnus in 2011, Harrison founded Harrison Energy Partners in 1983 after working for 17 years for a firm in Shreveport, Louisiana. The business expanded into Northwest Arkansas in 1988 and into Tulsa and Oklahoma City in 2017. The company now has 202 employees in five locations providing commercial air conditioning services.

Inducted into the Arkansas Academy of Industrial Engineering in 1991, Harrison has endowed three scholarships through the Academy and serves on the college's Dean's Advisory Council. He also is a member of the Towers of Old Main, an honorary group celebrating major donors to the university.

In the Distinguished Alumni category, the Department of Industrial Engineering had two inductees. Vance Clement, B.S.I.E. '92 and Latanyua Taylor Robinson, B.S.I.E. '92. The Early Career Alumni Award saw two department alumni recognized, Brianna D. Robinson, M.S.O.M. '23 and Jake Wofford, B.S.I.E. '10.

Jennifer P. Cook, director of communications
College of Engineering

Arkansas Academy of Industrial Engineering Inducts New Members

The members of the Academy, faculty, staff, family and friends gathered on the evening of April 19, 2024, to celebrate the induction of seven new members. This marked the 38th anniversary of the academy. The event was held at the Holiday Inn Convention Center in Springdale.

The evening was punctuated by the outstanding success of the annual silent auction, which raises funds for scholarships. Donations from the auction totaled $2,955.

New members inducted:

- David Bates, B.S.I.E. 2004; Sam's Club, group director growth and supply chain finance
- David Boguslawski, B.S.I.E. 2003; CityVet, CEO and president
- Julia Carmack, B.S.I.E. 2008; Campbell Soup, senior manager/customer sales lead - Natural Channel
- Rafael Merida, B.S.I.E. 2004; Tyson Foods, procurement director

- Lindsey Simpson, B.S.I.E. 2006, M.S.I.E. 2007; Walmart, senior manager assortment analytics
- Kelly Sullivan, B.S.I.E. 2006, M.S.I.E. 2008; U of A, Department of Industrial Engineering, associate professor
- Ed Pohl, honorary; dean, U of A, Graduate School and International Education

Photo credit: Mia Quain

Class of 2024 AAIE Inductees
R-L: David Bates, Kelly Sullivan, Lindsey Simpson, Rafael Merida, Julia Carmack, David Boguslawski and Ed Pohl, honorary.

SafeBreak® Receives FDA Approval

Lineus Medical® is proud to announce the U.S. Food and Drug Administration (FDA) has cleared its flag ship product, SafeBreak® Vascular, for use on all vascular access lines including peripheral IV catheters, midlines, peripherally inserted central catheters, central venous catheters, IV ports, and interosseous vascular access devices on patients two weeks of age and up.

Vance Clement, industrial engineering alumni and CEO of Lineus Medical, stated, "What an exciting time for SafeBreak Vascular and Lineus Medical! We recently gained license in Canada and now FDA clearance for all medical lines for patients to two weeks of age and up in the United States. SafeBreak® is a simple device that can make a big difference for nurses and hospitals. These new indications are for more complicated and more expensive IV lines that are used for long-term infusions, cancer patients, and in emergency situations. SafeBreak® has been shown to work well on peripheral IVs, and now it can be used by nurses to protect these more expensive lines on more vulnerable patient populations. With these additional indications, we can expand the benefit of SafeBreak® throughout the entire hospital."

Lineus Medical®

Lineus Medical Receives Small Empolyer of the Year Award

Lineus Medical has been recently awarded the 2023-2024 University of Arkansas College of Engineering Small Employer of the Year!

This prestigious award recognizes the outstanding achievements and significant impact that Lineus Medical has made in the career readiness, development, and support of the College of Engineering at the University of Arkansas.

Vance Clement, CEO of Lineus Medical and I.E. alum, shared, "Our headquarters are within a stone's throw of the University of Arkansas. We have worked with many U of A interns over the years and have always been impressed with their maturity and the business skills they bring to the job. We try to contribute not only by providing internships and jobs but also by guest lecturing and bringing some real-world experiences into the classroom for all the students. We are proud to be recognized for our efforts by the College of Engineering."

OUR FACULTY

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